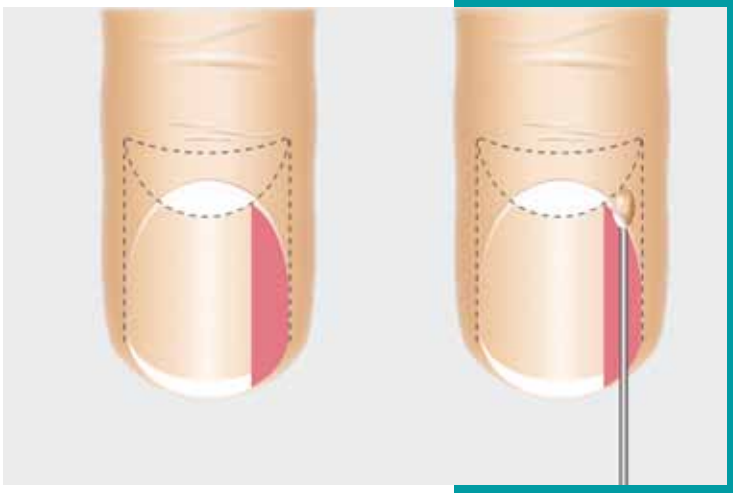
English edition
2011

n°4

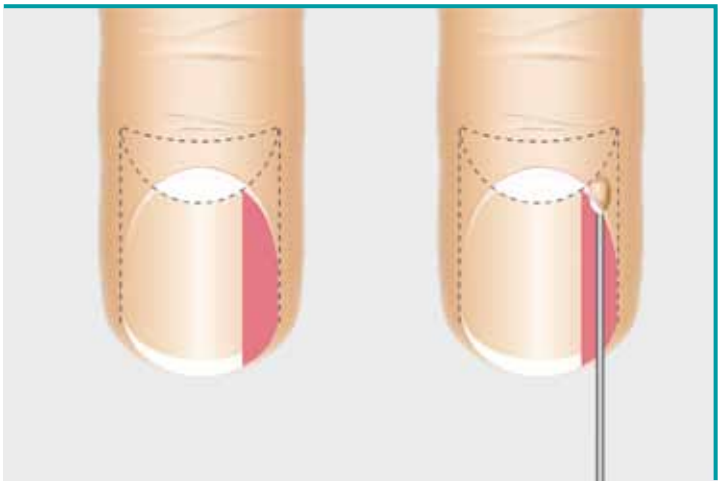
The nail



What's new ?

Pierre Fabre
DERMATOLOGIE

The nail - What's new ? n° 4



Phenol technique for ingrown nail

Almost eight years ago, Pierre Fabre Dermatologie team decided that the nail and its treatment should become a less off-putting subject. Showing characteristic leadership they started publishing an annual review which summarized and commented upon articles published during the year. They distributed it to dermatologists. Three years later they must have realized how English speaking Dermatologists need this more than those with the mother tongue and now we have the English edition.

I am delighted and honored to be invited to write a short editorial for this edition of The Nail - What's new? French speaking Dermatologists from France and Belgium have been the powerhouse of nail excellence throughout my professional life. They have drawn those from other parts of Europe and the rest of the world together in the medical understanding and teaching on nail disease.

For many of you, this will be the first time you will have read this Pierre Fabre publication and you will find it stuffed with useful insights and reminders. Each of the contributing authors brings something special to this edition.

There is a useful review of management of onychomycosis by Bianca Maria Piraccini highlighting new treatments. Bruno Fouilloux describes a report of the testing of the infrared titanium sapphire laser in the eradication of Trichophyton rubrum from nail clippings in vitro. He rightly points out that we will need a proper trial of in vivo disease to determine if this modality of treatment is going to be useful to us in the future. To date, the evidence for efficacy of laser treatment of fungal nail disease noted by Dr Piraccini remains limited and the cost is high.

Make sure you look up the Love, Hildreth and ice cube tests for sensitivity and specificity in the diagnosis of a subungual glomus tumour in the review by Bertrand Richert.

If you are thinking of handing round the "paradise nuts" at your next drinks party, I advise you to read the review of the report of acute selenium poisoning given by Jose Maria Mascaro. This may not be the answer for every patient who comes to see you with greying hair and nail dystrophy, but it is a heck of a diagnosis if you can make it.

Don't forget how melanonychia can arise through post inflammatory pigmentation. This is the basis of the clinical report from Eckart Haneke in a 50 year-old with a dark streak in the nail. The history is not always given freely, so awareness of the clinical signs and their inter-relationship is important for diagnosis. And whilst it may be reassuring that not all brown streaks are melanoma, it can be unsettling to read how pink streaks can be. No read through the nail literature is complete without a few scary stories concerning missed melanoma. The 3 cases reported by Josette Andre and colleagues and reviewed by
Eckart Haneke will keep you on your toes and ensure a low threshold for a tissue diagnosis in a single digit where there is an unexplained abnormality.

Osvaldo Correia reviews a series of 46 children who have sustained nail bed injuries, where trauma has required assessment and in some instances, repair with rapidly absorbable suture. The results are almost universally good, but points raised by nail colleagues include the observation that "less is more" for this kind of trauma in many reports: repair may be unnecessary and a general or local anaesthetic may be avoided. Check out the review and references.

Robert Baran continues to keep us abreast of new signs and understanding in nail disease. In his review of the article by Shelley Aldrich, he introduces us to the term "red comets". This describes longitudinal nail bed fibromas with a prominent vascular pattern that presents with a focal leading vascular mark and a trailing capillary pattern - like a comet. Professor Baran also reminds us of the characteristics of clubbing and the reliability of Schamroth' s sign. And finally, if you were in any doubt as to whether to put that glitter colour on your nails or in the acrylic nail gel you use, beware of the cobalt allergy.

I hope you enjoy this edition as much as I have.

David de Berker

The nail - What's new ? n° 4

Condensed selected articles with commentary

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Clinical cases

Continuing Medical Education

Notes

The nail - What's new ? n° 4

Condensed selected articles with commentary

Robert BARAN

A sonographic spectrum of psoriatic arthritis: "the five targets"

Gutierrez M, Filippucci E, De Angelis R et al. *Clin Rheumatol* 2010; 29: 133-142

Psoriatic arthritis (PsA) is a chronic and heterogeneous inflammatory joint disease that occurs in 6 to 42% of patients with psoriasis. A variable spectrum of pathological conditions can be found in PsA patients including joint and tendon inflammation, enthesitis, new bone formation, severe osteolysis and an overlapping of all of these. A common denominator is skin psoriasis. Recently, the definition "psoriatic disease" was proposed to encompass the involvement at different levels of tissue and organs.

The continuous technological advances in the field of ultrasound (US) have allowed the development of equipment with high and variable frequency probes and very sensitive power Doppler (PD) (Fig 1) which permits both the detailed study (with a resolution power of 0.1 mm) of morphostructural changes and the sensitive detection of blood flow even in small vessels of superficial tissues.

Most of the studies have been aimed at investigating the capacity of US in the assessment of joints, tendons, and entheses in patients with PsA. In this article, the authors clearly show the potential of US in the evaluation of skin and nails.

Table: Grayscale US pathological findings in the joints of patients with PsA

Joint effusion	Homogeneous anechoic joint space widening
Proliferative synovitis	Joint space widening with clusters of soft echoes (bushy and villous appearance) and/or homogeneous synovial thickening
Bone erosion	An intra-articular discontinuity of the bone surface that is visible in two perpendicular planes

Tendons

The spectrum of pathological conditions affecting tendon surrounded by synovial sheath is wide and includes: exudative or proliferative tenosynovitis, loss of "fibrillar" echotexture and a partial or complete tear. "Dactylitis" is a common feature of PsA.

Enthesis

The latest generation of US equipment provides a detailed assessment of the entheseal morphostructural features. Thanks to the superficial location of the most frequently involved entheses, probes with high-frequency PD can be used, giving a sensitive assessment of the entheseal perfusion status.

In the early stages of the disease, the entheses and the adjacent structures may show several morphostructural changes as entheseal thickening, hypoechogenicity, and fibrillar separation due to intratendineous oedema, with or without associated bursitis and different patterns of PD signal distribution. At this stage, the bone profile does not usually show relevant changes.

In the late stages, bony cortex changes may be related to the presence of enthesophytes and/or bone erosions. Large enthesophytes may generate acoustic shadowing, which may partially or completely impair the visualization of adjacent bone erosions.

Onychopathy

The pathological US findings in psoriatic onychopathy include both nail plate and nail bed. In the early stages, a minimal loss of the hyperechoic definition involving only the ventral plate may be observed, whereas the thickening and the fusion of both plates (with loss of the intermediate anechoic layer) are more frequent in the later stages. The nail bed (distance between the ventral plate and the bone margin of the distal phalanx) is usually thickened (>2.5 mm). Contrarily to other anatomical sites, a minimal quantity of blood flow can occasionally be detected in normal conditions within the nail bed (due to the presence of thin arterial and venous vessels). It increases excessively (easily detectable by PD) when in presence of onychopathy.

Discussion

The results demonstrated that the increase of blood flow in psoriatic plaque and onychopathy, due to several dermovascularity changes such as elongation, dilatation and twisting of the microvessels, can easily be detected by high Power Doppler frequency.

Considering the common pathogenesis between the

A sonographic spectrum of psoriatic arthritis: "the five targets"

angiogenesis of psoriatic plaque and synovial membrane, US could be considered as a powerful tool able to provide a widespread and more complete assessment of morphostructural changes and disease activity at different locations such as joint, tendons, entheses, skin and nails in patients with PsA.

COMMENTARY R. BARAN

Not costly compared to MRI, sonography, especially 3D, is one of the most interesting tools allowing one to predict further arthritic complications.

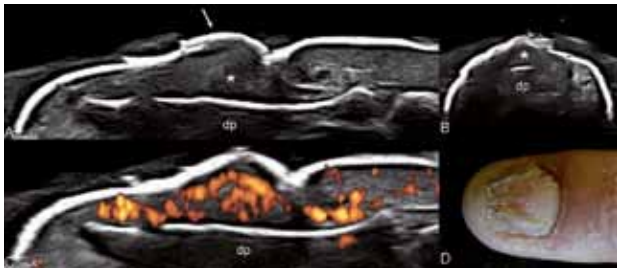

Fig1 - Power doppler sonography revealing marked signal indicative of an increase of blood flow at the nail bed level. (Coll X. Wortsman, Chile).

Nail-art and cobalt allergy

Guarneri F, Guarneri C, Cannavo SP. *Contact Dermatitis* 2010; 62: 320-21

This is a case report of a 37-year-old housewife, with no previous history of allergic contact dermatitis, presenting with multiple, intensely itchy, eczematous periungual and palmar lesions on both hands, which had appeared about seven months earlier.

The patient reported that nine months before, she had undergone a nail-art procedure by a professional beautician and had repeated the procedure herself at home several times (approximately monthly). The "nail gel" used was labelled "acrylic"but the ingredients were not listed on the packaging.

Patch tests were performed.

International Contact Dermatitis Research Group guidelines showed sensitization to cobalt chloride (+++ on both D2 and D4), which was not present in the nail gel. When specifically asked, the patient admitted that she had added a "glitter colour", bought via Internet, to the original top coat gel. The label of the additional product revealed that it contained cobalt.

Removal of all products from her nails led to complete resolution in 4 weeks.

COMMENTARY R. BARAN

Testing performed by the authors was wise, I rarely trust the patients input alone, even with labelled products.

Fig1 - Nail art (Coll D. Schoon USA)

Robert BARAN

Nailing down the genetic and immunological basis for psoriatic disease

McGonagle D, Fontana NP, Tan AL, Benjamin M. *Dermatology* 2010; 22 (suppl 1): 15-22

Psoriatic disease encompassing skin, joint and nail involvement (Fig 1) is largely viewed as autoimmune a finding supported by data from animal models, the human leukocyte antigen (HLA)-Cw6 disease association in man, T-lymphocyte infiltration in lesional skin and the favourable skin response to T-cell-directed therapies. However, this immunopathogenetic model only applies to the skin, as recent studies have failed to demonstrate a HLA-Cw6 association with the nails or joints. Furthermore, the nails and joints are intimately associated with inflammation at points of ligament or tendon insertion (i.e. enthesitis Fig 2), so it is now appreciated that both of these sites also share a common micro anatomical basis.
Moreover, inflammation at insertion sites and nails does not appear to be associated with a particular antigenic territory, but is quite diffuse in nature. This suggests that an aberrant response to tissue stressing of the integrated nail-joint apparatus, rather than autoimmunity, is driving the inflammatory process. Therefore, HLA-Cw6 associated type 1 psoriasis is more closely linked to autoimmunity, whereas nail and joint disease may be linked to tissue-specific factors, including tissue biomechanical stressing and microtrauma, that lead to activation of aberrant innate immune responses.
These observations that stem from nail disease, point towards a relative differential involvement of adaptive and innate immunity in the psoriatic disease spectrum. They offer a fresh perspective on the pathophysiology of psoriatic disease and how it can be classified along with the immunological disease continuum of self-directed inflammation.

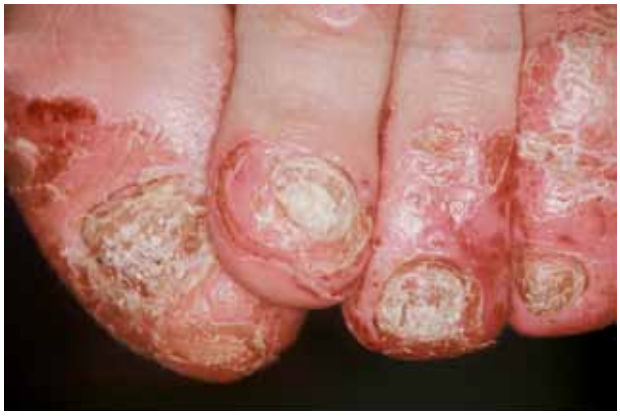

Fig1 - Psoriasis involving the distal phalanges of the feet.

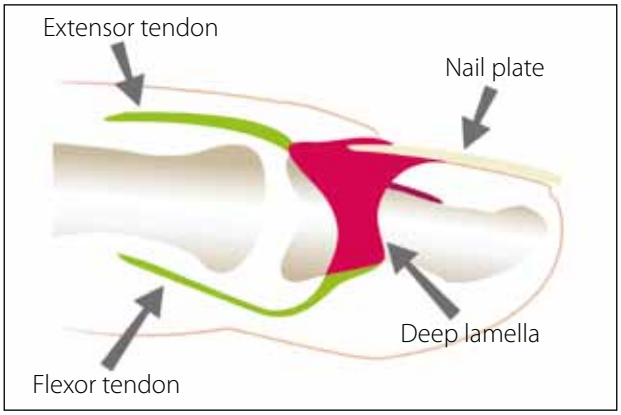

Fig2 - Enthesites of the nail apparatus on the distal phalanx. After D. McGonagle.

COMMENTARY R. BARAN

Little by little, psoriasis delivers new messages on its pathophysiology.
There is still a long way to go before reaching the target.

Robert BARAN

Validity and reliability of the Schamroth sign for the diagnosis of clubbing

Pallarés-Sammartin A, Leiro-Fernandez V, Cebreiro TL et al. *JAMA* 2010; 304:159-161

Digital clubbing is characterized by the enlargement of the terminal segments of the fingers or toes, resulting from a proliferation of connective tissue between the nail matrix and the distal phalanx and may be a sign of respiratory and other diseases (Fig 1). Confirming clubbing requires using instruments to determine the nail bed angles or the phalangeal depth ratio (PDR) and is not performed routinely.

In this study, the clinicians first independently evaluated the presence of the Schamroth sign on the third (or, if not possible, the fourth) fingers of both hands. The test characteristics of the Schamroth sign (sensitivity, specificity, positive and negative predictive values and likelihood ratios) for the identification of clubbing were calculated, using a PDR greater than 1 as the criterion standard. Agreement between the two observers was determined by the k statistic.

This study provides an estimate of the diagnostic accuracy of the Schamroth sign for clubbing. The authors were not aware of any similar studies for other signs of clubbing, so direct comparisons could not be made. The interobserver agreement in this study compares favourably with that obtained in studies of other procedures to diagnose clubbing (k values between 0.39 and 0.90).

Although there was no blinding between the two procedures performed by the same investigator, PDR was consistently performed after first assessing the Schamroth sign. As PDR is a relatively objective measurement, with a high interobserver concordance for PDR (combined with a more modest concordance for the Schamroth sign), any bias in PDR measurement was likely to be minimal.

COMMENTARY R. BARAN

For clinicians, the Schamroth sign (Fig 2) is the easiest indicator for the diagnosis of clubbing. In a normal individual a distinct diamond-shaped aperture or "window" is formed at the base of the nail beds if symmetrical fingers are placed against each other with contact on both dorsal surfaces. Early clubbing obliterates this window and demonstrates a prominent distal angle between the ends of the nails.

In contrast, pseudoclubbing is defined as an overcurvature of the nails in both the longitudinal and transverse axis, with preservation of a normal Lovibond's angle. This "profile sign" measures the angle between the curved nail plate and the proximal nail fold, when the finger is viewed from the side. This is normally 160° but exceeds 180° in clubbing.

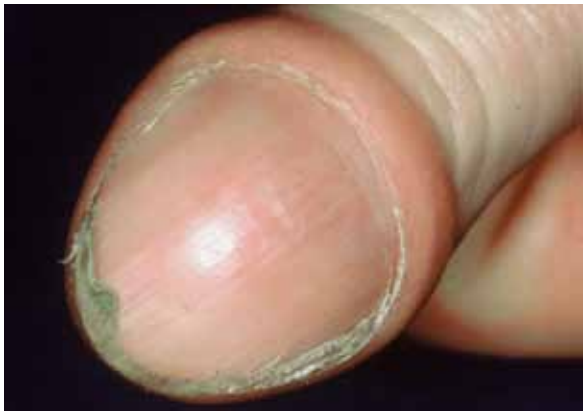

Fig1 - Clubbing in a patient with pulmonary disease (Coll M. Jeanmougin, Paris).

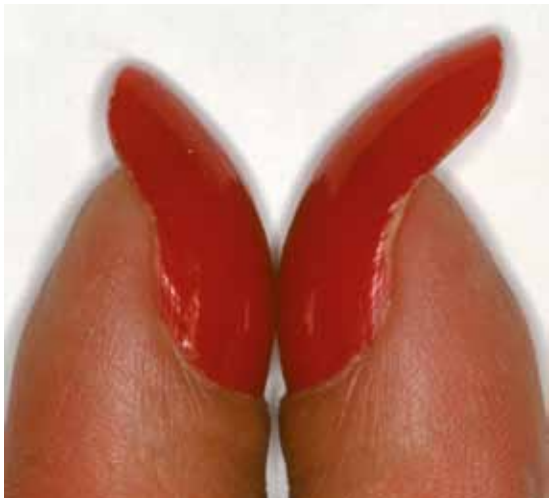

Fig2 - Schamroth's sign.as observed in clubbing.

Robert BARAN

Acral lesions in tuberous sclerosis complex: insights into pathogenesis

Aldrich SL, Hong C-H, Groves L et al *J Am Acad Dermatol* 2010; 63: 244-51

Patients with tuberous sclerosis complex (TSC) have a mutation in a tumour suppressor gene: either TSC1 or TSC2. Formation in multiple organs is accompanied by a somatic mutation that disactivates the wild-type allele, in accord with the two-hit hypothesis of Knudson. Tumours have been reported in the brain, heart, lungs, kidneys and skin of patients with TSC. The skin tumours include facial angiofibromas (Fig 1), forehead plaques, shagreen patches and ungual fibromas (Fig 2).
Ungual fibromas are a major diagnostic criterion for the diagnosis of TSC and a concern to patients because of pain and distortion of the nail. The most recent consensus criteria stipulated that ungual fibromas must be non-traumatic to serve as a major criterion, because single ungual fibromas occur in the general population in response to trauma.
The frequency of ungual fibromas varies in studies from 15%, 22%, to 52% . This variability appears mostly attributable to different age compositions of study populations. Ungual fibromas are among the last skin lesions to appear in TSC, with onset typically in the second decade and as late as the fifth decade.

In one study, ungual fibromas were not observed in TSC for children under five, although the percentage with ungual fibromas increased with age in older children and adults (23% of patients with TSC aged 5-14; 68% aged 15-29 ; and 88% aged ≥30 years old).
Ungual fibromas are described as periungual (arising under the proximal nailfold) and subungual (originating under the nail plate).
There are notable associations of TSC with "red comets", splinter haemorrhages, and longitudinal leuconychia. The distribution of acral lesions is not random. Lesions predominate on fingers and toes that are most likely to be subjected to trauma.

Results

In this study, 76 patients with TSC were examined. Their age ranged from 20 to 69 years old, with a mean age of 39 (SD 11 years).
The number of ungual fibromas ranged from 0 to 45, with a mean of 6.3 ± 8.8. Most patients had ungual fibromas on one to eight digits and one patient had them on all 20 digits. The mean number of digits with one or more fibromas was 3.6 ± 4.5. About half of the patients with ungual fibromas had both periungual and subungual lesions, with periungual fibromas predominating overall.
Periungual fibromas were pink papules originating from under the proximal or lateral nailfold. Their shapes resembled garlic cloves, or were globoid, fusiform or vermiform. Most had a hyperkeratotic tip, sometimes with punctuated haemorrhage just proximal to the tip. The underlying nail plate had a longitudinal groove that usually approximated the width of the fibroma. Nails distorted by multiple large periungual fibromas were dystrophic or absent (second and fifth digits).
Longitudinal nail grooves were also observed in the absence of any visible periungual fibroma. As these grooves did not typically develop visible fibromas over several years of observation, they were counted separately and not included as periungual fibromas. Nails of some patients had multiple longitudinal striations.
Subungual fibromas were observed as pink papules originating under the nail plate. Those located more distally, protruded from beneath the nail plate as focal areas of hyperkeratosis or larger papules. More proximal or larger fibromas lifted the nail plate and were accompanied by subungual hyperkeratosis. Small subungual fibromas did not protrude, but were visible under the nail as oval, red or white discolorations.

In addition to these classic TSC findings, some patients had subungual red comets, splinter haemorrhages, and longitudinal leuconychia. Red comets were partially blanchable longitudinal streaks that had a larger distal head with a narrowing proximal tail. They were solitary or multiple and were made more evident with light pressure applied to the nail. Some comets had a whitish halo around the distal portion of the comet. Most patients were unaware of their presence. Comets were frequently associated with splinter haemorrhages, within and distal to the comet. Longitudinal leuconychia appeared as white streaks extending from

Acral lesions in tuberous sclerosis complex: insights into pathogenesis

the nail matrix to the end of the nail. Red comets, splinter haemorrhages, and longitudinal leuconychia were observed in 29%, 46%, and 18% of patients, respectively. These were less common than periungual fibromas, longitudinal nail grooves without a visible fibroma, and subungual fibromas (71%, 68%, and 50% of patients, respectively).
Macrodactyly and pachydermodactyly were infrequent findings in TSC.
Toenails had significantly more periungual fibromas than fingernails (282 vs 86, P < .001), compared with the numbers of lesions expected, assuming equal distribution to feet or hands. Subungual fibromas and comets showed the opposite distribution, with significantly more subungual fibromas and comets on fingernails than toenails (71 vs 45, P = .016, and 93 vs 4, P < .001, respectively).

Discussion

Red comets were observed in about a quarter of adult patients with TSC. Red comets are partially blanchable suggesting the presence of telangiectasias with extravasated blood. They vary in size but most appear stable over time. They differ from splinter haemorrhages by the frequent presence of an enlarged distal end with an associated rim of pallor as well as by their persistence.
Splinter haemorrhages were found in almost half of the patients with TSC and are the lesser diagnostic of TSC, because they occur commonly after minor nail trauma. They are also associated with skin diseases such as psoriasis or onychomycosis, systemic diseases such as subacute bacterial endocarditis or antiphospholipid antibody syndrome and after treatment with kinase inhibitors such as sorafenib.
Periungual fibromas were most common on the fifth toe and subungual fibromas on the central third of the thumb. The role of trauma in ungual fibroma formation is also supported by patient history, because some patients reported developing periungual fibromas on the fingernails after a crushing injury. This might be a result of trauma-induced production at the wound site of MCP-1, a paracrine factor that can promote TSC skin tumorigenesis.

COMMENTARY R. BARAN

This is probably the best clinical paper on acral lesions in TSC, stressing on the red comets and longitudinal leuconychia.

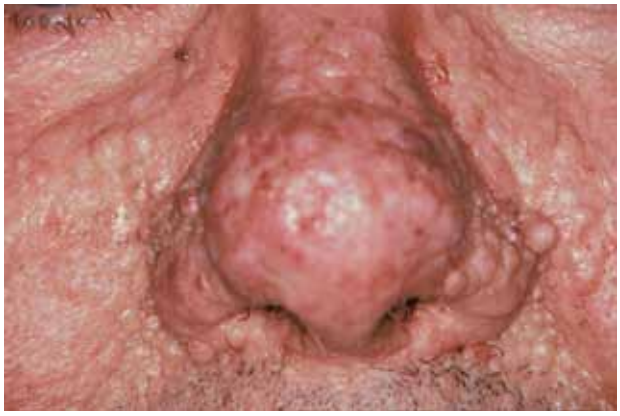

Fig1 - Facial angiofibromas.

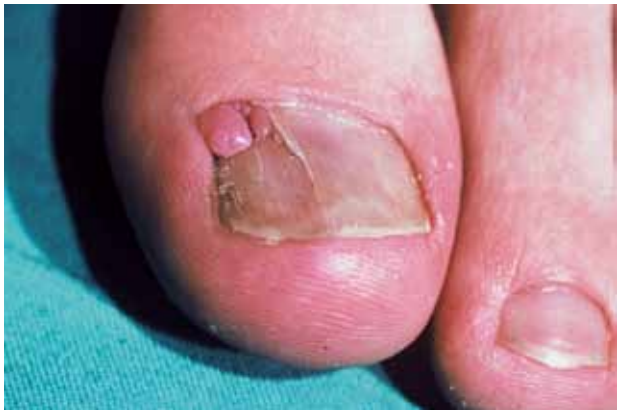

Fig2 - Nail fibroma of the toe.

Robert BARAN

Onychopapilloma presenting as longitudinal leukonychia

Criscione V, Telang G, Jellinek NJ. *J Am Acad Dermatol* 2010; 63: 541-42

This is a case report of a 50-year-old woman referred for the evaluation of dystrophy of the right third fingernail. The nail plate had split distally for several years. Her medical history was non-contributory. The physical examination revealed a 1-mm wide band of longitudinal leukonychia with a slight longitudinal ridge on the right third fingernail (Fig 1).

No erythronychia was present. Distally, there was a V-shaped notch and split, with a keratotic 1-mm papule at the hyponychium. The other nails were normal. Lateral nail plate curl avulsion exposed a longitudinal ridge extending from the midmatrix onto the nail bed. A longitudinal biopsy from matrix to hyponychium was performed. On histological examination, the nail bed exhibited slender, elongated and hyperplasic rete ridges with underlying fibrosis and thickening of the fibrovascular dermal stroma. Upper nail bed keratinocytes were large and exhibited ample pink cytoplasm, similar to the nail matrix keratogenous zone. Hyperkeratosis was seen at the hyponychium.

A periodic acid-Schiff test did not reveal fungal elements. These findings were therefore consistent with the diagnosis of onychopapilloma.

Other occurrences of suspected onychopapilloma have been reported, including one case representing solitary nail bed lichen planus and also in the spectrum of localized longitudinal erythronychia. In addition to onychopapilloma, the differential diagnosis for localized longitudinal erythronychia includes Bowen disease and histological investigation is often warranted.

COMMENTARY R. BARAN

Were it not for the white colour of the longitudinal dystrophy, the clinical lesions would have the same aspect as the localized longitudinal erythronychia. This reminds me that in Darier's disease there are red and white longitudinal lines and depending on the authors, the white ones become red or the red lines become white.

Fig1 - Longitudinal leukonychia (Coll D. Wagschall, France).

Incomplete development of the nail of the hallux in the newborn

Millano A, Cutrone M, Laforgia N, Bonifazi E. *Dermatology Online Journal* 16 (6): 1, 2010

There are few papers about nail alterations in neonates. In this paper, the authors examined the nails of 541 consecutively born neonates (252 females and 289 males), with age ranging from 1 to 28 days (average age 3.2 days). Of these, 94 were premature and 1 post-mature. Re-examination 7 days to 6 months later was possible in 36, namely to evaluate the persistence of the alterations observed during the first examination. Different characteristics were recorded like alignment, shape, size and length, color, free border, presence of lunula or Beau's lines and changes in the periungual tissue. Particular attention was paid to the shape of the toenails, especially of the big toe.

In 64,1% of the neonates the hallux nail was triangular shaped or, rarely, trapezoidal with the shorter base being distal. Although 72,3% of the premature babies had triangular hallux nails compared with 62,5% of full term newborns, the difference was not statistically significant. Similar alterations were sometimes observed in other toenails but never in fingernails. The cases with a triangular shaped hallux nail also showed apparent hypertrophy of the lateral and/or distal fold of the periungual skin, but without inflammation of the periungual tissue. In the subsequent consultations (median 2 months: 45-90 days) the triangular and trapezoidal hallux nails progressively became rectangular shaped.

The authors named this condition as triangular nail of the hallux, previously reported in literature as congenital hypertrophy of the lateral fold of the hallux or congenital ingrown toenail, but the patients examined had no inflammation in the periungual tissue and the alterations spontaneously regressed.

COMMENTARY O. CORREIA

This paper presents a review of nail findings from a large series of neonates. Particularly interesting is the finding of a hallux nail with a triangular shaped or rarely, trapezoidal with the shorter base being distal, without periungual inflammation in 64,1% of the babies. More important is the finding that the nails in all reexamined patients spontaneously became normal rectangular shaped in a median of two months. However the authors only reexamined 10% of the babies with the triangular nail of the hallux at birth. It is also strange that the authors did not report any other frequent findings either in the finger or toenails like transitory transverse ridges very frequent in the first three months of life.

It seems that the slower growth of the toenails explains why (at birth) the triangular shape is only seen in the toenails, in particular the hallux, and not in fingernails. It is also important that the apparent hypertrophy of the distal and lateral folds of the nails are only a secondary transitory problem, which means that we must avoid unnecessary invasive therapeutic measures and we suggest taping as a way to improve this condition. This description is different from the congenital malalignment of the big toenail (Fig 1).

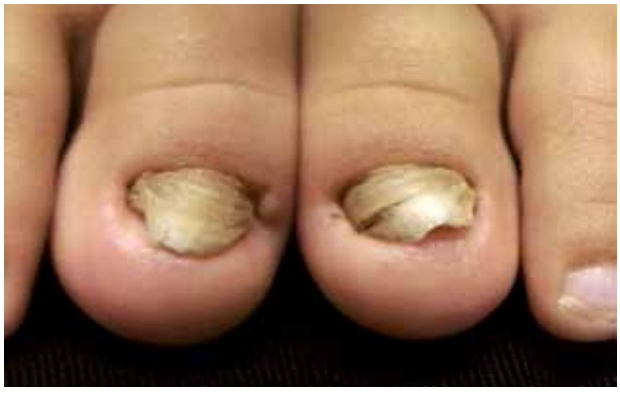

Fig1 - Malalignment of the big toenail.

Osvaldo CORREIA

Neonatal Onychomadesis

Parmar B, Lyon C. *Pediatric Dermatology* 27 (1): 115, 2010

The authors described a 6-week-old baby with Beau's line and incipient onychomadesis affecting all the fingernails. The distance from the proximal nail fold was temporarily consistent with late intra-uterine or birth trauma. However the pregnancy and the vaginal delivery were apparently normal. They did not find paronychia. They hypothesized that the stress of even a normal vaginal delivery is sufficient to influence nail growth to a greater or lesser extent in almost all babies.

COMMENTARY O. CORREIA

The finding of superficial transverse ridges in normal babies in the first 1 to 3 months of life is well reported. However, onychomadesis usually appears as a whole-thickness groove, dividing the nail into two parts, typically leading to shedding of the nail plate (Fig 1). This is rare in young babies. It occurs when a systemic event, infection or trauma, is severe compared with Beau's lines that present as transverse depression of the surface of the nail plate as a consequence of drug intake or a not so severe illness or trauma.

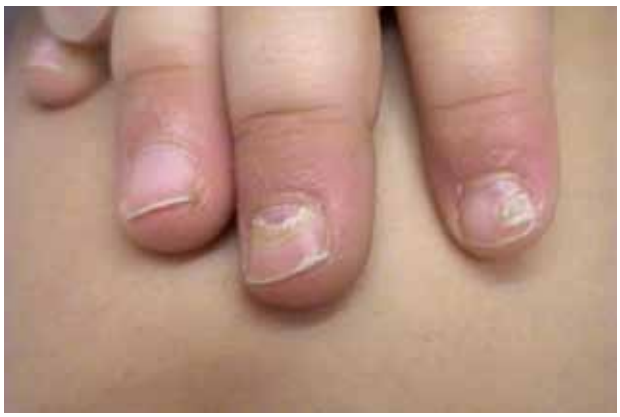

Fig1 - Onychomadesis after respiratory infection and ibuprofen intake.

Transverse leukonychia (Mees' lines) associated with docetaxel

Ceyhan AM, Yildirim M, Bircan H A, Karayigit DZ. Letter to the Editor. *J Dermatol* 2010; 37: 188-189

The nail abnormalities found in patients with cancer are frequently the result of side effects of different antineoplastic agents. Docetaxel, a member of the taxanes group, is a well known antitumour agent that promotes microtubule polymerization and inhibits tubuline depolymerization, resulting in the inability of cells to replicate.

Taxanes cause nail changes very often. In this paper the authors described a female patient with a metastatic non-small cell lung cancer that was submitted to treatment with docetaxel 75 mg/m2 every 3 weeks. After two courses of docetaxel white transverse bands on fingernails were apparent.

These bands didn't disappear with pressure. There was no

Transverse leukonychia (Mees' lines) associated with docetaxel

other medication and the bands disappeared 3 months after stopping docetaxel.
Nail side effects after docetaxel treatment are frequent (as high as 44%) and multiple: onycholysis, Beau's lines (Fig 1), subungual hemorrhage (Fig 2), subungual hematoma, subungual hyperkeratosis, hypo and hyperpigmentation, paronychia and onychomadesis. Sometimes acute painful paronychia (Fig 3) and subungual abscesses can lead to high morbidity. Mees' lines, as a nail side effect of docetaxel therapy, had not been apparently described before. Mees' lines result from abnormal keratinization of the nail plate due to transient matrix injury and differ from Muehrcke lines that are related with an abnormality of the vascular nail bed and disappear while the nail is depressed.
Mees' lines were described after arsenic intoxication, different traumas, nutritional deficiencies, systemic illness, infectious diseases and some drugs, like cyclosporine, and daunorubicin.

Fig1 - Beau's lines after docetaxel treatment.

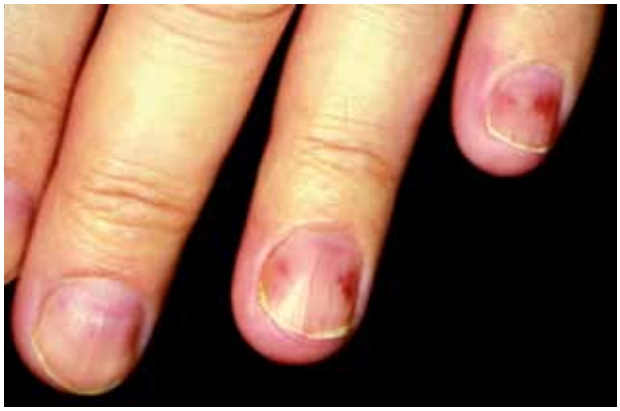

Fig2 - Subungual hemorrhage after docetaxel treatment.

Fig3 - Acute painful paronychia after docetaxel treatment.

COMMENTARY O. CORREIA

Taxoids are used today for the treatment of several cancers (breast cancer, genito-urinary, gastric, lung, head and neck cancer). Several papers had reported previously about the diversity of nail side effects of docetaxel. We had the opportunity to describe some of them before: dark pigmentation and Beau's lines, subungual hemorrhage, orange discoloration, paronychia, onycholysis, subungual hyperkeratosis and transverse loss of the nail plate [1]. Acute painful paronychia can induce high morbidity and discontinuation of the treatment. Clinicians, namely oncologists and general practitioners should recognize the clinical picture of these adverse nail reactions because docetaxel is used today for several neoplastic disorders and differential diagnosis is essential.

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Osvaldo CORREIA

Nailbed repair and patient satisfaction in children

Pearce S, Colville RJ. *Ann Royal Coll Surg Engl* 2010: 92: 483-485

This is a retrospective study of 46 consecutive nailbed injuries and their consequent repair, during a 6 month period in 2005, in a paediatric hand trauma clinic in London.
The nailbed lacerations were repaired with simple interrupted sutures with Vicryl Rapide. Mean age was 4 years (9 months to 15 years), 61% were male and the middle finger was the most commonly injured digit (37%), followed by the thumb (22%) and ring finger (15%).
The dominant hand (65%) was injured more than the non-dominant hand. The majority of injuries occurred indoors (78%), usually with a door (74%) and an underlying fracture was noted in 45% of cases.
Most of the cases were operated within 24 hours of injury and under general anaesthesia, because most were young children. Follow up ranged between 15 and 21 months. Overall patient satisfaction was 8.9/10 and appearance of the finger 9.2/10. Only 7% of the patients had nailbed deformities (dull streak and partially adherent nail).

COMMENTARY O. CORREIA

This a very interesting review of nailbed repair, after hand trauma in children, most commonly with a door, and most frequently on the middle finger (the longest digit) and the thumb (used to grip the edge of an object or door) with a very high satisfaction rate. Sometimes deformities can occur and persist during life (Fig 1).

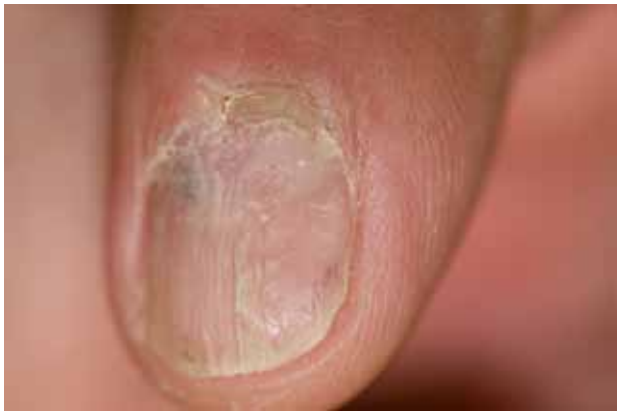

Fig1 - Nail deformity on the second finger of right hand of an adult, after door trauma when child.

The use of autologous platelet gel in toenail surgery: a within-patient clinical trial

Córdoba-Fernández A, Rayo-Rosado R, Jiménez JM. *The Journal of Foot & Ankle Surgery* 2010 (49): 385–389

Autologous Platelet Gel (APG) has platelet-derived growth factors that had been used in acute and chronic wound healing. It has been postulated the important role of platelets in the cicatrization in particular in hemostasis, acute inflammation, and proliferative phases. Platelets have concentrated levels of naturally occurring growth factors and other substances that have the potential to accelerate healing. The platelets contain substantial reservoirs of cytokines, namely platelet-derived growth factor (PDGF) and transforming growth factor beta (TGF-β).
These substances exert their effect on the cells, acting in all stages of cicatrization, especially hemostasis and early fibroplasia and consequently reduce ecchymosis, bleeding, and edema and possibly decrease wound pain.

In this study, the utility of APG in surgical treatment of ingrown nails was analyzed (Fig 1). Thirty-five healthy

The Use of Autologous Platelet Gel in Toenail Surgery: A Within-Patient Clinical Trial

volunteers (70 feet) (54,3% were males) underwent surgical treatment for bilateral ingrown hallux nails. Recovery time, postoperative pain and inflammation were studed.
Recovery time and postoperative pain were less in the APG group, although the differences were not statistically significant.

COMMENTARY O. CORREIA
So, the benefits of using APG in hallux nail surgery are limited. The evidence to support their use is lacking. These data suggest that surgeons should critically examine the effectiveness of these products for soft tissue healing. More studies are needed to determine the effectiveness and to know if their use in other surgical procedures may improve morbidity and allow a faster return to activities in the daily lives of patients undergoing surgery.

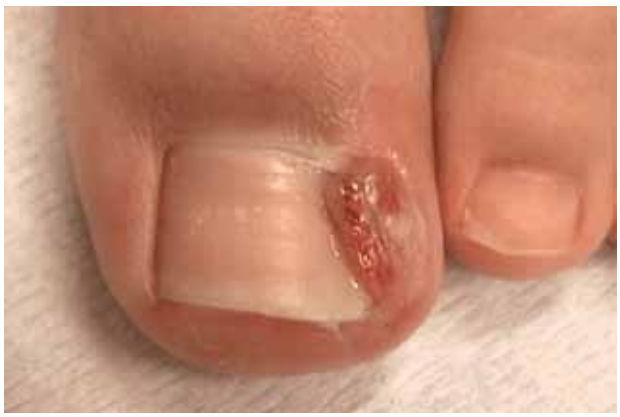

Fig1 - Ingrown nail.

Determination of amphetamine-type stimulants, ketamine and metabolites in fingernails by gas chromatography-mass spectrometry

Kim JY, Shin SH, In MK. *Forensic Science International* 2010 (194): 108–114

The increasing abuse of illicit drugs that have stimulant and hallucinogenic properties requires rapid, sensitive analytical methods for analysis in biological samples. Examples of these drugs are amphetamine-type stimulants (ATSs) such as amphetamine (AP), methamphetamine (MA), 3,4-methylenedioxy-N-amphetamine(MDA), and 3,4-methylenedioxy-N-methylamphetamine (MDMA). These synthetic drugs are simple to produce, inexpensive to buy, and usually have a long-lasting effect, so their abuse has become universally widespread and a major public health concern in many countries. Ecstasy (MDMA) and its derivatives are central nervous stimulants including euphoria and alertness. Ecstasy is usually not pure MDMA and used in combination with other substances such as ketamine (KET), MDA, and caffeine. KET is a short-acting but powerful general anaesthetic which depresses the nervous system.

The matrices commonly used for drug testing are urine, blood, hair, oral fluid, sweat, and nails in forensic chemistry and toxicology. Drug testing in keratinized matrices of hair and nails has gradually been gaining attention because of its advantages over conventional urine or blood analysis. The collection of these samples is simple and noninvasive. Furthermore, as the parent drug and its metabolite are incorporated inside the matrix, they are stable for long periods of time and difficult to alter. It has been shown that the axial distribution of a drug in the nail plate could provide a relatively long-term window depending on the length of nail.
To date, ATSs, cannabinoids, opiates, cocaine, phencyclidine, benzodiazepines and methadone are among the drugs that have been detected in nails. These studies have been based on several instrumental methods including immunoassay, high performance liquid chromatography

Osvaldo CORREIA

Determination of amphetamine-type stimulants, ketamine and metabolites in fingernails by gas chromatography–mass spectrometry

(HPLC), gas chromatography-mass spectrometry (GC-MS), and liquid chromatography-mass spectrometry (LC-MS). Due to its specificity and sensitivity, the GC-MS method in the selected-ion monitoring (SIM) mode has been routinely employed for the detection of drug abuse in nails. Although GC-MS is known to be a sensitive technique for ATSs analysis, a derivatization step is sometimes required because of similar fragmentation patterns for target analytes and, consequently, poor diagnostic ions in the mass spectrum. In this study, the authors focused on the development and validation of a sensitive method for simultaneous determination of MA, MDMA, KET and their major metabolites. To increase detection sensitivity, the efficiency of derivatization was investigated with three different acylation reagents. The method was also evaluated for its feasibility and applicability to fingernail samples obtained from drug abusers.

Fingernail samples were obtained from seven drug abusers with positive samples tested for drug use during a screening test of urine or hair samples by GC-MS. The samples were obtained by cutting the excess overhang of the nail plate. Drug-free fingernails obtained from eight laboratory personnel were used to prepare the matrix for the control and calibration samples and to measure the growth rate of the fingernail.

The rate of fingernail growth has been reported to be approximately about 3 mm a month. Actual growth rate is dependent upon age, gender, season, exercise level, diet, and hereditary factors. Fingernails require about three to six months to regrow completely. The mean fingernail growth rates of two subjects for three years were 3.11 mm/month and 3.14 mm/month while those of six subjects for two months ranged from 2.46 mm/month to 3.62 mm/month. These growth rate data could be used to confirm the long-term administration of illicit drugs in fingernails as segmental hair analysis was used to verify both their previous drug history and their recent enforced abstinence. A total of seven fingernail samples obtained by drug abusers were analyzed for MA, AP, MDMA, MDA, NKT and KET. MA was the most frequently detected compound and was detected in six samples. AP was detected in four samples, which is a metabolite of MA, and that could be found at low levels in fingernails of MA drug abusers. MDMA, MDA, KET and NKT were detected together in only one sample, and their use was related with polydrug consumption in combination with MA, MDMA and ketamine.

COMMENTARY O. CORREIA

The increasing abuse of illicit drugs requires rapid and sensitive analytical methods for analysis in biological samples.

As stated by the authors a rapid, sensitive GC-MS method was developed and validated for measuring AP, MA, MDA, MDMA, NKT and KET in fingernails.
The method includes alkaline hydrolysis, liquid–liquid extraction step and HFB derivatization of analytes. The collection of fingernail samples is simple and noninvasive in comparison to urine and blood. The axial distribution of a drug in the nail plate would be similar to the way drugs are distributed in hair. Fingernails could be an especially useful alternative for retrospective investigation of chronic and past drug consumption when it is impossible to obtain a hair specimen. This method was successfully applied for the determination of six phenylalkylamine derivatives in fingernail samples from drug abusers.

Incidence of koilonychia and atrophy of the lingual papillae in a patient with iron-deficiency anemia

Takahashi T, Yamashita K, Hatao K. *Int J Hematol*. 2010; 91:161-2.

This is a brief non-abstracted report in a haematology journal concerning a single case of a 61 year-old woman who presented with heart failure on the background of a profound anaemia (Hb 2.1 g/dl, MCV 64.6, MCH 64.6fl, MCH 16.2pg and MCHC 25g/dl) and "low ferritin levels". At the same time she was observed to have a smooth tongue and marked koilonychia. In the article, they illustrate both with subsequent improvement in the glossitis commencing within 4 weeks of starting treatment for the anaemia.

Fig1 - Idiopathic koilonychia.

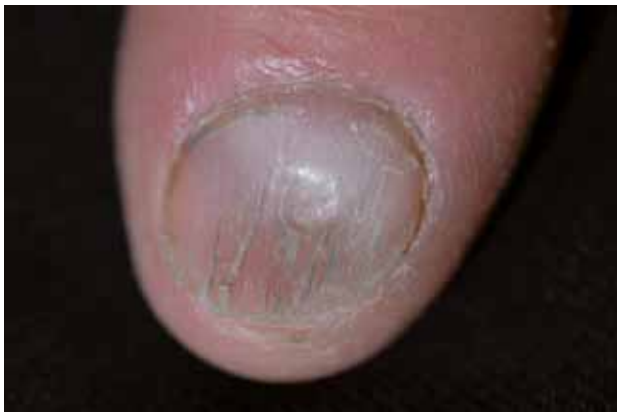

Fig2 - Koilonychia associated with lichen planus.

Fig3 - Koilonychia in the big toe of a 15 month old child.

COMMENTARY D. DE BERKER

We see koilonychia in many settings and the association with anaemia is one of the least common in Dermatology in first world countries. In this report we do not have any comment or illustration to demonstrate that the nails got better after iron treatment and so clarify that the cause of the koilonychia was anaemia and not one of the many others (Figs 1-3). With this in mind we would expect a general skin examination, or at least of the sites that would have helped us to ensure that the nail changes were not part of lichen planus which can also present with nail atrophy and a degree of koilonychia. It is also a shame that they do not report the level of ferritin.

I have seen many cases of koilonychia and yet iron deficiency anaemia is rarely implicated, which is contrary to the common clinical teaching in general medicine [1]. I remember a case where the anaemia was down to 8.4g/dl with a ferritin of 4 in a vegan presenting with hair loss and normal nails. Conversely, we see in our paediatric service, that koilonychia is a relatively common finding in the toenails (Fig 3) of children under 3 and can persist in the big toenails for several years longer. These are children

David DE BERKER

Incidence of koilonychia and atrophy of the lingual papillae in a patient with iron-deficiency anemia

who are generally healthy and there is little suspicion that they have iron deficiency anaemia as it is usually not sought. Koilonychia in this age group, in healthy children, is more likely to be a mechanical effect of a thin immature nail plate in a digit where the forces within the distal digit distort it into a concavity rather than a convexity. With time, soft tissue changes and a thicker nail plate, the morphology reverses.

The literature and discussion with colleagues in non-Western countries makes me think that the association is more common in "another time and another place". The original articles on the association gave rise to the terms Plummer Vinson syndrome and Paterson Kelly syndrome. Henry Plummer (1874-1936) and Porter Vinson (1890-1959) were physicians at the Mayo clinic who reported a series of women between 1912 [2] and 1919 [3] with longstanding iron deficiency anaemia, dysphagia and spasm of the upper oesophagus. They were all treated with bougie dilatation of the oesphagus. Donald Paterson (1863-1939) and Adam Kelly (1865-1941) were Scottish Ear Nose and Throat specialists. They noted and separately published a range of more detailed findings on the same disease [4,5].
A significant part of the syndrome is an obstructive web or carcinoma of the oesophagus. The relationship between the web and iron deficiency is not clear. It could be that the obstruction interferes with diet and subsequent iron intake.

However, it is also observed that iron deficiency can lead to mucosal degeneration and web formation which can be reversed by iron supplementation alone.
The parallel of this appears to be happening with the lingual papillae, with regeneration of the papillae commencing within 1-2 weeks of starting iron replacement in 12 of 14 subjects found to have glossitis associated with iron deficiency anaemia [6]. It would make an interesting study to examine the state of the nail bed epithelium in different deficiency states and in relation to koilonychia, but the ethics would be complicated.
In spite of the established association of Plummer Vinson with an oesophageal web or carcinoma, the most common association in contemporary practice is gluten enteropathy, with 22% presenting with this as cause, closely followed by menorrhagia (19%) [7].

In countries where dietary insufficiency is more common, there may be more frequent cases of an association between nail changes and iron deficiency anaemia. In spite of this, even where the diagnostic threshold for koilonychia was reduced to "flattening" of the nail, the association could not be confirmed [8].

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David DE BERKER

Long-term follow-up of toenail onychomycosis caused by dermatophytes after successful treatment with systemic antifungal agents

Piraccini BM, Sisti A, Tosti A. J *Am Acad Dermatol*. 2010; 62:411-4.

Seventy three patients participating in a trial of dermatophyte onychomycosis treatment of the toenail were followed for up to 7 years. The group included 59 treated with terbinafine 250mg daily for 12 weeks and 14 with itraconazole 400mg daily for one week per month over 3 months. All were clear of clinical and mycological evidence of disease at 12 months post treatment. Twelve of the 73 patients (16.4%) had relapse at a mean time of 36 months after successful treatment. Of these, 35.7% had taken itraconazole and 11.9% terbinafine. The authors conclude that treatment with terbinafine may result in a better chance of remaining clear of onychomycosis than treatment with itraconazole.

COMMENTARY D. DE BERKER

This report is almost certainly the follow up process on a larger pharmaceutical trial where the initial recruitment was to make a comparison between the efficacy of terbinafine and itraconazole in the same manner as the LION trial [1].

It is likely that the patients were effectively randomised into the 2 limbs, but we would want to know their characteristics at the beginning of the trial. We would then want to know the comparative characteristics of all the patients of the 73 who had a successful outcome. We are given the causal fungi of this latter group, but otherwise only given data on the characteristics of the relapsing cases - which are largely similar.

It is interesting that most of the relapsing patients used amorolfine and it would be helpful to see how this reflects general use in the entire 73 patients. Amorolfine is particularly suited to superficial white onychomycosis (Fig 1). It is also common to use amorolfine with a view to preventing relapse and this may have been an opportunity to give an approximate answer as to whether it makes a difference. Current reports suggest that the addition of an application of amorolfine lacquer every 2 weeks alongside and following treatment with terbinafine for 12 weeks, might reduce the relapse over 36 months following curative treatment with terbinafine. A gap of 17 to 20% opens up between those treated after cure with amorolfine and those not, with the latter ultimately demonstrating a 50% success rate in comparison with 70% [2].

Finally, did any of the success patients drop out, during therapy, between successful cure and follow-up or subsequently during the follow up period? It is not clear whether the figure of 73 is literally all the patients recruited to the initial trial of therapy, or if there were a range of drop outs for different reasons. The tendency in these semi-retrospective observational studies is to report the data on the patients that you have the data on and to statistically ignore those that do not enable full analysis. But this can lead to a range of uncertainties and in this instance, where the significance is p=0.046, it is close to the chosen significance level of 0.05.

All this said, the results are consistent with other reports that have illustrated a higher relapse rate for patients taking itraconazole over terbinafine [3] with 5 year follow up results suggesting an overall cure of 13% and 46% respectively.

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Fig1 - Superficial white onychomycosis.

David DE BERKER

Growth rate of human fingernails and toenails in healthy American young adults

Yaemsiri S, Hou N, Slining MM, He K. *J Eur Acad Dermatol Venereol.* 2010;24:420-3.

This paper was written by a team with a background in nutrition and public health. They employed a common technique for nail growth studies which entails making a transverse groove in the nail plate at some point connected with a landmark of the proximal nail (Fig1). This can be the proximal nail fold or the lunula and a Beau's line can be nature's version of the same landmark (Fig2). Whilst the latter is better in that its location does not alter like that of the nail fold, it poses a problem in that it is not visible in all digits and rarely visible in a toe. Twenty two healthy American young adults made measurements on themselves according to written instructions with a simple file and millimetre rule over 4 months in the Spring. The findings were similar to those from earlier studies and included the observations that the toenails grow more slowly than fingernails. Youth, male gender and onychophagia (severe nail biting) make the nails grow more quickly.
The big toenail was the fastest of all toenails at 2.1mm per 30 days in comparison with a thumb of 3.55mm. But the thumb was not the fastest of hand digits, where the middle finger was the fastest at 3.65.

COMMENTARY D. DE BERKER

There is a wonderful heritage of people measuring nail plate growth.
Some personal, such as the thirty five year prospective observations of WB Bean [1]; some in extreme situations as in the arctic studies of Geoghegan et al, where results published in 1958 [2] suggested that the cold of the Arctic reduces rates of nail growth. By 1977, the gloves or nutrition of polar research teams had improved sufficiently so the environment appeared to be of no relevance [3]. Nevertheless, it remains a clinical observation that people with "poor circulation" or formal Raynaud's, appear to have slow nail growth in most instances and correspondingly poor wound repair from the daily small traumas that heal without note in normal people [4].
However, we should return to William Bennett Bean MD. His initial publications were from the Department of Internal Medicine of the State University of Iowa Hospitals when in 1953, his first work on the topic described the previous 10 years of "scoring the nail sharply with a razor blade" which he eventually gave up for a file [5]. He did this on and off for the next 40 years allowing him to make a range of well observed and valid comments on nail growth [6-9]. His successive publications from 1953 to the final comment in the Archives of Internal Medicine in 1980, take the reader through technique, disease, despondency and the effects of ageing. His digits were his laboratory and I would like to get the Bean Boxed Set for Christmas!

Fig1 - Transverse groove in the nails at the proximal nail fold margin of both thumbs of a 14 year-old girl with recent fracture of the right wrist. This nail grows more rapidly.

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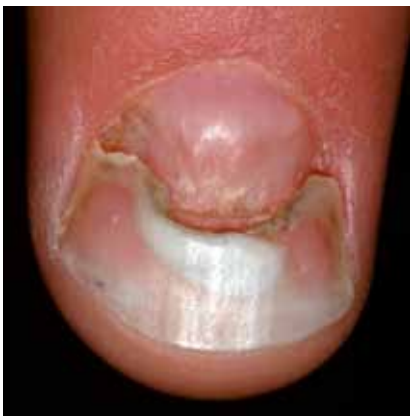

Fig2 - A Beau's line is a natural transverse marker in the nail for the measurement of the elapse of time.

David DE BERKER

Benign tumors and pseudotumors of the nail: a novel application of sonography

Wortsman X, Wortsman J, Soto R, Saavedra T, Honeyman J, Sazunic I, Corredoira YJ. *Ultrasound Med.* 2010;29:803-16.

Wortsman and Wortsman have undertaken a wide range of studies using ultrasound on the digit and this paper summarises an area of their experience in the assessment of swellings that they refer to as tumours and pseudotumours of the nail. The paper describes 103 patients who had both ultrasound assessment and subsequent surgery so that the diagnosis and location could be corroborated. They used a machine referred to as an HDI 5000 system from Philips, using a compact linear probe (7-15MHz) to determine location, size, echogenicity and blood flow. In addition to defining the ultrasonic characteristics of a range of tumours, they made a comparison with their clinical diagnoses (Table 1). The main benefits were identified for granulomas and subungual exostoses. They reported that the imaging also helped the planning of the surgery and detection of recurrence.

Table 1
Correlation between clinical and ultrasound findings in tumours and pseudotumours of the nail unit.

Type	Clinical %	Sonography %
Glomus tumour	93	100
Granuloma	38	91*
Synovial cyst	80	100
Subungual Exostosis	23	100*
Fibroma	67	83

*P<0.001

COMMENTARY D. DE BERKER

My preliminary enquiries concerning the cost of machines able to deliver high resolution ultrasound, suggest that they would be in the region of 100,000 Euros and the probes several thousand Euros in addition. I suspect that this is not a piece of equipment most of us will be having on our desk. Are we missing something? Well, I am not sure. The study is undertaken by someone with 18 years of experience and a renowned expert in the field. So we cannot assume that the quality of their results would be reproducible by an average practitioner. Their view is that it has particular value for subungual exostosis (Figs 1, 2) and granuloma. I would question this on clinical grounds in that what we are interested in is the certainty of the diagnosis established by this method. The main differential for a granuloma is chronic infection, squamous cell carcinoma and amelanotic melanoma (Fig 3). Where the history and response to therapy does not allow a clear diagnosis with clinical cure, histology is essential and we would never rely on a non-histological diagnostic test if left with any uncertainty.

The other diagnosis given is subungual exostoses. In truth, the valid test for this assessment is a plane and lateral or oblique x-ray (Fig 4). Although with experience, the clinician may have a sensitivity to the diagnosis of subungual exostosis as good or better than x-ray, as a baseline we want to know the comparison with standard radiology.
The third point is, "would the result of the ultrasound make any difference to the decision to operate?" In that

David DE BERKER

Benign tumors and pseudotumors of the nail: a novel application of sonography

the study involves only patients who proceeded to surgery; this is not an easy question to answer. It would be interesting to have a comment from the authors on this point. However, if it does not alter the decision to operate, the next question is "does it make any difference to the nature of the surgery undertaken?" The authors suggest that it allows planning and discussion in a more precise manner that might improve the quality of the surgery. This is understandable and a common value of imaging in all surgical spheres, but this observation would need to be a general comment based on the author's experience and one that is difficult to quantify.

The equipment resolution of up to 15MHz is at the lower end of what Worstman advocates for current use [1]. This may mean that some of these comments might be modified with more modern equipment. Indeed, I think that all imaging is useful as a means of understanding disease and if this were to represent a cheap and accessible process then I am sure we would take to it like dermoscopy. For the time being I am going to keep an eye on e-Bay.

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Fig1 - Subungual exostosis.

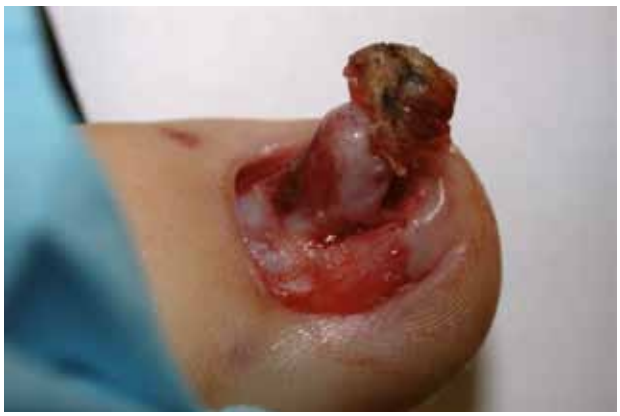

Fig2 - Subungual exostosis with the nail plate avulsed.

Fig3 - Pyogenic granuloma of the fingernail unit.

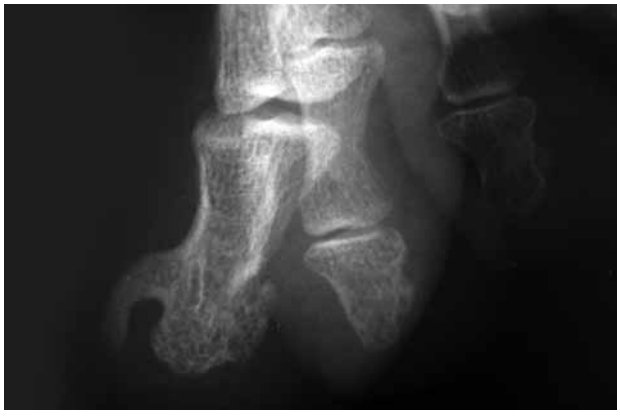

Fig4 - X-ray of subungual exostosis.

David DE BERKER

Nail changes in kidney transplant recipients

Abdelaziz AM, Mahmoud KM, Elsawy EM, Bakr MA. *Nephrol Dial Transplant*. 2010; 25:274-7.

Three hundred and two renal transplant recipients were screened for the presence of nail changes and compared with a control group of 302 matched healthy individuals. The recipients were 216 males and 86 females and had lived with the transplant for an average of 6.57 years (range 1.5 months - 23 years). Clippings and culture were undertaken where there was a suspicion of onychomycosis. Some form of nail change was seen in 40.1% of transplant patients in comparison with 34.4% of controls with onychomycosis (7.6% vs 2.3%), Muehrcke's nail (4.3% vs. 0.3%) and leuconychia (3.6% vs. 0.66%). Both renal transplant patients and controls had a surprising incidence of absent lunulae affecting all nails (29.8% vs. 26.5%).

The patterns of onychomycosis were different in the 2 groups in that the controls demonstrated only distal lateral subungual onychomycosis. Amongst the renal group there were 4 with total dystrophic onychomycosis and 2 with proximal white subungual onychomycosis - a pattern typically associated with immune suppression.

COMMENTARY D. DE BERKER

These results are within the expected range of nail changes for this disease group. It is not a surprise that onychomycosis is slightly more common in immune suppressed people and that the patterns of presentation may also reflect their immune status. Nevertheless, it remains relevant and the data acts as a reminder to those caring for renal or other organ transplant recipients, to keep an eye on their nails as onychomycosis is a treatable complication. The presence of Muehrcke's nail and leuconychia is interesting as it illustrates some characteristic of nail bed vasculature or oedema that is more commonly found in renal transplant patients. In this instance it would be interesting to make a comparison with other organ transplant recipients, such as heart or liver, as they do not have the same reasons for altered soft tissue turgor and lymphatic function. Comparison with patients treated with haemodialysis gives some remarkable differences [1]. The latter appear to also have vascular changes to the nail bed, but in the form of half and half nails seen in 14.4% as opposed to 0.3% of transplant recipients. By contrast, the transplant patients had Muehrcke's line in 4.3% whereas it was seen in only 1% of haemodialysis patients. Although the Abdelaziz paper proposes that there may be a racial tendency to absent lunula given the high rate in controls (26.5%) and transplant patients (29.8%), this appears low in comparison with Brasilian controls (44.4%) and those on haemodialysis (62.9%). These signs are consistent with those reported in an Egyptian paper comparing haemodialysis patients with controls [2] and a Turkish one with a group of chronic renal failure patients compared with haemodialysis patients [3], but the frequency of the signs seems to vary quite significantly between publications. It would be interesting to know if this was based on genetics, subtleties of renal management or diagnostic criteria for the signs described. Although it is quite easy to make a diagnosis of the most obvious version of Muerhcke's lines and half and half nails, subtle variants could make definition difficult.

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David DE BERKER

Nail-patella syndrome with an emphasis on the risk of renal and ocular findings

Kamath S, Bhagwandas K. *Pediatr Dermatol.* 2010;27:95-7.

The case of a 6-year-old girl is reported, who had a range of problems evolving in the first years of life along with the characteristic triangular lunulae most apparent in the thumbs. The presence of 3+ proteinuria and difficulties with the carrying angle of the arms, may have prompted the radiological assessment that revealed the lack of patellae and the presence of iliac horns. This collection of features was enough to secure the diagnosis of nail patella syndrome, but it was further elucidated by demonstration of one of the relevant LMX1B gene mutations.

The authors make a point of highlighting the risk of glaucoma and renal failure and the value of lifelong screening to detect any early and treatable signs. The risks of nephropathy are relatively low and the risks of glaucoma difficult to calculate.

Fig1 - Triangular lunulae are characteristic of nail patella syndrome.

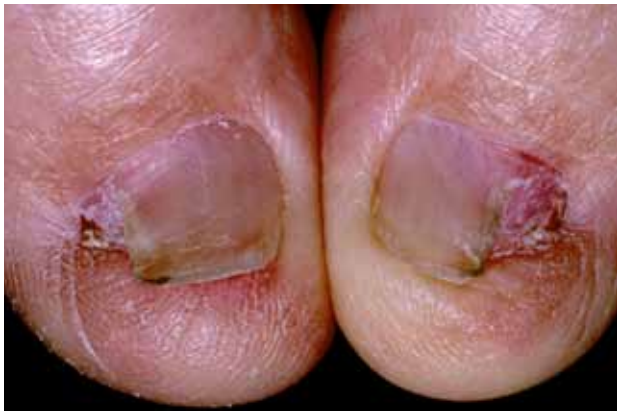

Fig2 - The thumbnails have a varied degree of dystrophy and may be completely absent.

COMMENTARY D. DE BERKER

Once the diagnosis is made (Figs 1, 2) the most important aspect of patient management is to ensure that they do not suffer renal or ocular damage. Early detection is usually the way of managing these concerns and the guideline by Sweeney in 2003 recommended lifelong annual monitoring of blood pressure, urinalysis and glaucoma assessment from the age when the child is able to cooperate with the examination [1]. Mimiwati [2] proposes that the examination might be less often, but at present there is insufficient knowledge of the pattern of disease development in different genotype/phenotype groups to give discriminating guidance.

A further concern with these patients is that they see a large number of specialists for their various physical manifestations of the disease, although they are not screened effectively for other features that may present more discreetly. A good primary care physician could take on this role, or a dermatologist, but it is important that the patient or their family is properly educated to know these things are necessary. Where proteinuria or haematuria presents, early involvement of the renal team can be helpful. Recent experience of adding losartan to enalapril suggests that renal compromise can be reversed if the disease is treated fairly early [3].

The review paper in 2003 by Ellen Sweeney, a geneticist at the Royal Liverpool Hospital remains one of the most useful clinical overviews. In it, she also gives suggestions concerning monitoring which can be supplemented by patient information from the Nail Patella Society UK [4].

Recommendations for the care of patients with NPS [1]:

- Annual screening for renal disease from birth. This should include blood pressure and urine analysis. A urine albumin: creatinine ratio on a first morning urine is preferable to urine analysis dipsticks as it is a more sensitive measure and corrects for concentration of the urine. If any abnormalities are detected the patient should then be referred to a renal physician for further investigation and follow up.
- Screening for glaucoma every two years in adulthood. This should include measurement of intraocular pressure, examination of the optic disc, and assessment of visual fields in order to detect normal pressure glaucoma.
- Before treatment such as surgery or intensive physiotherapy is considered for orthopaedic abnormalities, it is recommended that information on possible abnormal anatomy of both bone and soft tissue is acquired by magnetic resonance imaging (MRI).
- Genetic counselling should be offered to all patients with NPS.

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Bruno FOUILLOUX

Total excision of acquired periungual fibrokeratoma using bilateral proximal nail fold oblique incision for preserving nail matrix

Lee CY, Lee KY, Kim KH, Kim YH. *Dermatol Surg.* 2010; 36:139-41

Acquired periungual fibrokeratomas are rare, benign, fibrous, hyperkeratotic tumours.They usually emerge from the proximal nail fold or sometimes from the nail bed. This lesion was thought to be histologically identical to acquired digital fibrokeratoma.
It usually occurs as a solitary lesion in middle-aged people. Differential diagnosis includes Koenen's tumours of tuberous sclerosis, epidermoid cyst, rudimentary supernumerary digit, endochondroma, neurofibroma, verruca vulgaris or foreign-body granuloma.

The authors presented the case of a 32-year-old woman with a six-year history of a firm hyperkeratotic protruding acquired periungual fibrokeratoma. This protruding mass induced a groove-like depression of the subjacent nail plate on her left thumb.
They suggested total excision of the tumour to avoid local recurrences after partial excision or curettage. The origin of the tumour seemed to be the proximal margin of the germinal matrix. The nail plate in this area was thin or absent, so careless dissection would inevitably cause nail disfigurement. The germinal matrix had to be preserved by careful dissection along the undersurface of the tumour.
As the tumour should be excised completely with its basal attachment, the authors proposed oblique incision at both corners of the paronychium to retract the entire proximal nail fold and obtain an adequate exposure of the whole tumour and the surrounding matrix. Healing was without complication and improvement of the nail deformity was evident after 6 months.

COMMENTARY B. FOUILLOUX
The report of this surgical method is very clear and may be used for many others tumours.

Direct antifungal effect of Femtosecond laser on *Trichophyton rubrum* onychomycosis

Manevitch Z, Lev D, Hochberg M, Palhan M, Lewis A, Enk CD. *Photochem. Photobiol.* 2010; 86: 476-79.

The study goal was to evaluate if Femtosecond infrared titanium sapphire laser is able to reach the nail plate ventral part, which is the one affected by onychomycosis, at a power able to kill dermatophytes, without inducing thermal damage to the surrounding tissues.
For this purpose, the authors evaluated the fungicidal activity of the laser on 99 nail plate cuttings from nails affected by onychomycosis due to *T. rubrum*. The cuttings were irradiated using a laser with objectives with small apertures and focusing the laser throughout the nail plate, in order to reach its ventral portion. The irradiated nail cuttings were then put in cultures for 4 weeks to verify fungal growth or elimination.

An Environmental Scanning Electron Microscope (ESEM) examination of the targeted nail cutting was performed during laser treatment, in order to verify the extent of the laser-induced damage to the fungi and to the nail structures. The results permitted to obtain the laser fluence intensity necessary to kill all dermatophytes in every sample and to verify the absence of collateral damage to the nail structure

Direct antifungal effect of Femtosecond laser on Trichophyton rubrum onychomycosis

surrounding them. Femtosecond infrared titanium sapphire laser was also able to kill all fungi present in the entire nail depth, including the ventral part.

COMMENTARY B. FOUILLOUX

The possibility to treat onychomycosis using laser is intriguing, but there is still not evidence that laser therapy is more effective then systemic treatment. The requisites that a laser should be utilized for onychomycosis treatment are:
1- ability to kill fungi,
2- power to reach the deep portions of the nail at effective fluence,
3- capability to avoid damaging the surrounding nail.

The 2 lasers now available for the treatment of onychomycosis include Noveon diode laser [1] and 0.65-ms pulsed Nd:YAG 1064-nm laser [2].

In vitro studies show the fungicidal activity and ability to penetrate the nail plate. In preliminary in vivo studies, both lethers shown a good tolerability and a mycological cure rate of about 33% of the treated patients.
Femtosecond laser may be a valid laser treatment for onychomycosis, but in vivo controlled studies are necessary to validate this hypothesis.

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Identification of common nail and skin disorders

Wegener EE, Johnson WR. *J Hand Ther*. 2010; 23:187-191

This review discusses the more common disorders of the perionychium and skin, likely to be observed by the hand therapist. Its aim is to assist the therapist in recognition of abnormalities. Especially indications of when nail disorders resulting from trauma, infections and neoplasms, require referral to another practitioner. The authors emphasize differentiating between benign and malignant lesions. By knowing the suspicious characteristics of nail and skin disorders, the hand therapist can positively impact the well-being of their patients through quick referral.

COMMENTARY B. FOUILLOUX

This article is rather more intended for hand therapists than dermatologists. After some anatomic and physiological notions, it reviewed nails traumas, nails tumours and skin disorders. This review gives some good help towards early diagnosis and treatment.

Eckart HANEKE

Subungual extraskeletal chondroma with finger nail deformity: case report

Ishii T, Ikeda M, Oka Y. *J Hand Surg* 2010; 35A:296–99

Extra skeletal or soft tissue chondroma, is a rare lesion that has been described in subungual localisation [1-3] a total of only three times. These cases had been treated as dermatological diseases as they lacked radio-opacity. Depending on their size, they may cause nail deformity of varying degrees - just like any other subungual tumour. The authors observed a 39-year-old man who had observed a persistent swelling of the nail of his right index finger for 4 years. As he had no pain he did not consult a physician. The swelling slowly enlarged deforming the nail. At consultation, there was a 15 x 20 mm glossy mass on the dorsal aspect of the index finger's terminal phalanx, which reached from the distal interphalangeal joint under the nail. The lesion was hard to elastic and immobile. Finger mobility was not restricted. There were no signs of inflammation. Lab tests were normal. An X-ray showed some clustered calcification, but did not reveal any bone attachment and no periosteal reaction. Magnetic resonance imaging showed a soft tissue tumour well demarcated from the bone with lobulation and linear structures. This prompted the diagnosis of a cartilaginous tumour.

The lesion was removed after lateral incisions on the proximal nail fold in order to allow it to be reflected and the nail was avulsed. The nail bed presented markedly thinned. It was incised longitudinally demonstrating a white solid tumour measuring 9x15x19 mm. It could easily be shelled out. Histopathology showed a lobulated tumour of a basophilic hyaline substance with typical chondrocytes in clusters surrounded by a thin fibrous capsule. There were small areas of calcification and ossification. Compared to normal chondromas the cellularity was higher. Labelling with Ki-67 antibody (MiB1) showed less than 1% of the cells to be in a proliferative stage. P53 was negative.

The nail regenerated normally without any post-surgical deformity. After more than 3 years, no recurrence was noted. Extra skeletal chondroma is rare and only about 200 cases have been reported in the English-language literature. Most of them were located in the hands, and again about 60% of these developed in fingers, mostly on the ventral aspect. Extra skeletal chondroma is usually a well circumscribed mass, elastic to hard, with no connection with bone. Only 3 cases had previously been reported under the nail.

They had been considerably smaller and thus caused less nail deformation. In this case, however, there was a huge convexity of the entire distal phalanx. The radiographic and clinical features allow easy differentiation from subungual exostosis and glomus tumour. Histopathologically, the lesion was typical with hyaline cartilage and some myxoid degeneration, calcification and ossification. Differentiation from sarcoma is essential and may pose considerable difficulties. Increased cellularity, nuclear pleomorphism, the presence of chondroblasts and epithelioid cells, as well as the proliferation of multinucleated giant cells point to a malignant tumour. This case also showed some atypical histopathological findings. Using proliferation markers like Ki-67 and p53 may help to delineate chondroma from chondrosarcoma.

COMMENTARY E. HANEKE

As outlined by the authors, extra skeletal or soft tissue chondroma is a rare lesion. Their case is the fourth one described in subungual localisation [1-3]. It is evident that the diagnosis of a slow-growing painless mass extending under the nail is difficult (Fig 1a,b) and requires additionnal examinations such as X-ray (Fig 2) and MRI, the latter finally giving the most important information. However, it is usually said that a speckled appearance of a lesion radiographically suspected to be of cartilaginous origin may be a hint at

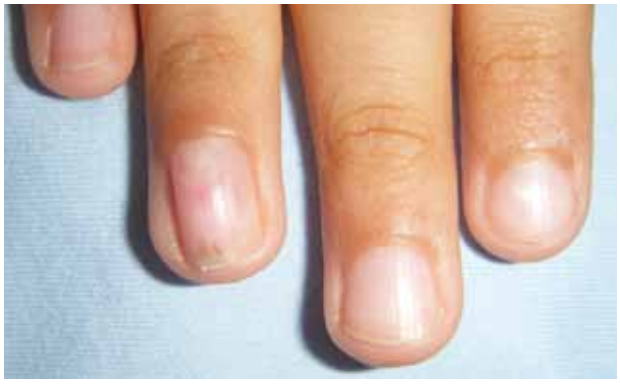

Fig1a- 11-year-old boy with nail enlargement and pseudoclubbing of his right ringfinger. Dorsal view.

Fig1b - Same patient. Lateral view.

Subungual extraskeletal chondroma with finger nail deformity: case report

malignancy, which is not discussed by these authors.
As simple excision is followed by recurrence in 17% of extra skeletal chondromas, clinical follow-up is essential. Excision should include the fine capsule usually found. Fortunately, no malignant degeneration of extra skeletal chondroma has been reported until now.

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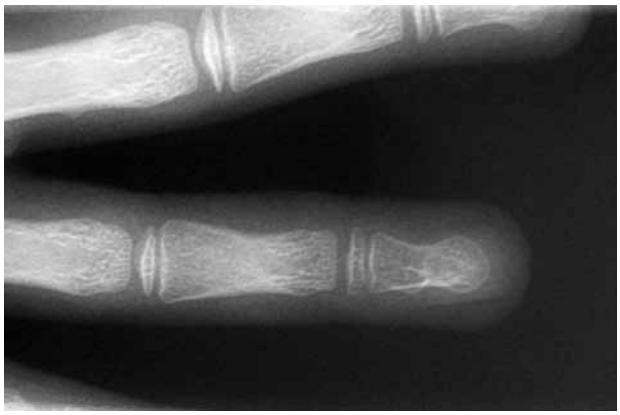

Fig2a - The radiograph shows a defect of the distal phalangeal bone. The radiographs suggest a subperiosteal localisation. Dorsal view.

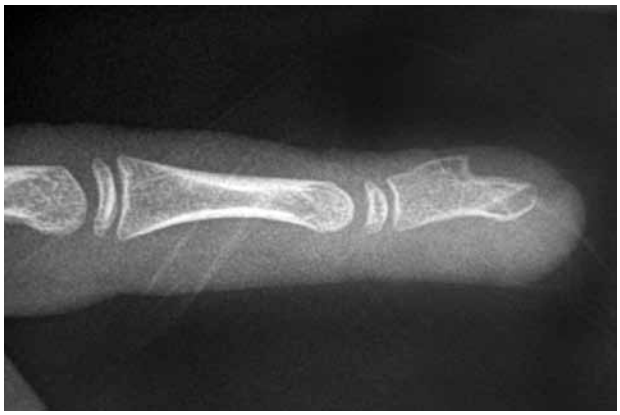

Fig2b - Same patient. Lateral view.

In situ amelanotic melanoma of the nail unit mimicking lichen planus. Report of 3 cases

André J, Moulonguet I, Goettmann-Bonvallot S. *Arch Dermatol.* 2010;146:418-421

Melanomas of the nail apparatus are notorious for their poor prognosis. This is mainly due to late diagnosis with large series of ungual melanomas usually exceeding Breslow index of 4 mm. In addition, half of the cases are originally misdiagnosed.
The authors describe 3 patients presenting nail changes that clinically mimicked ungual lichen planus.
The first patient was a 51-year-old woman who complained about a brittle thumbnail that had evolved over 18 months. She obtained an antifungal lacquer from her dermatologist, which did not improve the nail despite a one-year treatment. A second dermatologist took a specimen for mycological examination, which proved negative. Only then was the patient referred to the special nail clinic with a clinical suspicion of Bowen's disease. Her medical history was unremarkable except for scalp psoriasis. Clinical inspection revealed superficial longitudinal striations of the distal two thirds of the central portion of the thumbnail. There was no pigmentation. A 3-mm punch biopsy of the distal nail bed revealed psoriasiform hyperplasia and a marked increase in melanocyte density. They were located in the basal layer, were arranged as single cells and rare nests and in addition had irregular hyperchromatic nuclei. The diagnosis of incipient in situ acral lentiginous melanoma was made and the nail apparatus was completely removed. Defect repair was achieved with a skin graft. Histopathological examination of the complete specimen confirmed the in situ melanoma, which extended from the proximal matrix to the distal nail bed. The patient was still without recurrence five years after surgery.
The second patient was a 39-year-old man who had observed a nail dystrophy of his left index finger developing over a period of 6 months. First, two longitudinal ridges appeared, and then the nail became thin and brittle. Clinically, the nail was severely dystrophic in its median part. Two 3-mm punch biopsies were performed under the clinical diagnosis of lichen planus. Histology showed a dense and haphazard mostly lentiginous proliferation of atypical melanocytes with pagetoid intraepithelial

Eckart HANEKE

In situ amelanotic melanoma of the nail unit mimicking lichen planus. Report of 3 cases

spread. A diagnosis of in situ melanoma was made and the nail apparatus completely removed. Again, the histopathological examination of the complete surgical specimen confirmed this diagnosis. After 6 years, the patient was still free of recurrence.
The third patient was a 60-year-old woman with embarrassing lateral longitudinal splitting of her right thumbnail that she had observed for several months. A red spot was seen in the lunula, but MRI did not reveal any pathology. Another 6 months later the nail had divided into a main part and a spicule. A lateral longitudinal nail biopsy showed many atypical melanocytes with hyperchromatic nuclei as a lentiginous proliferation. As with the other two cases, there was no inflammation. The entire nail apparatus was removed, histopathology remained identical. A year later the patient was free of disease.

Roughly 20 to 30% of nail melanomas are amelanotic compared to only about 7% of other cutaneous melanomas. The most common clinical presentations are chronic paronychia, warts, chronic torpid ulceration, or pyogenic granuloma. The periungual folds are the most common localisations. Considering that misdiagnoses are common, even in pigmented nail melanomas, it is not surprising that they are even more frequent in amelanotic nail melanomas. Most nail melanomas begin in the matrix and cause a brown streak, known as longitudinal melanonychia. These cases should be reliably diagnosed - unfortunately this is often not the case, even when there is a Hutchinson sign. The only hitherto reported amelanotic subungual in situ melanoma appeared as a longitudinal erythronychia [1], thus clinically different from the observation of these authors. These cases had all been seen by experienced dermatologists before who did not make the diagnosis. The clinical diagnoses were psoriasis in case 1 and lichen planus in cases 2 and 3.
In fact, only histopathology allowed the correct diagnosis after a biopsy. Although nail ridging and splitting can be explained by proliferation of melanocytes in the matrix, this is not a typical and diagnostic sign for melanoma in absence of concomittent longitudinal melanonychia.
Lichenoid nail dystrophy of a single digit in an adult should prompt a diagnostic biopsy even when the diagnosis appears to be lichen planus.

COMMENTARY E. HANEKE

Subungual amelanotic melanoma in situ is certainly a rare event. The case reports show that even for the most experienced nail specialists the clinical diagnosis is difficult and the histological diagnosis then turns out to be unexpected (Fig. 1).
Fortunately for the experienced dermatologist, most ungual melanomas are pigmented. Unfortunately for many patients, the rate of misdiagnoses of melanotic tumours is still very high and late diagnoses - delays of more than 10 years until the patient presents with lymph nodes metastases - are common as is evidenced by median melanoma thicknesses of more than 4 mm in large series. The list of misdiagnoses is long, see above, and there are even cases of pigmented ungual melanomas treated as onychomycosis for a long time.
The authors' observation is extremely important for clinicians and histopathologists. They are, on the other hand, also proof of our concept that wide local excision is sufficient and that in situ melanoma does not require amputation.

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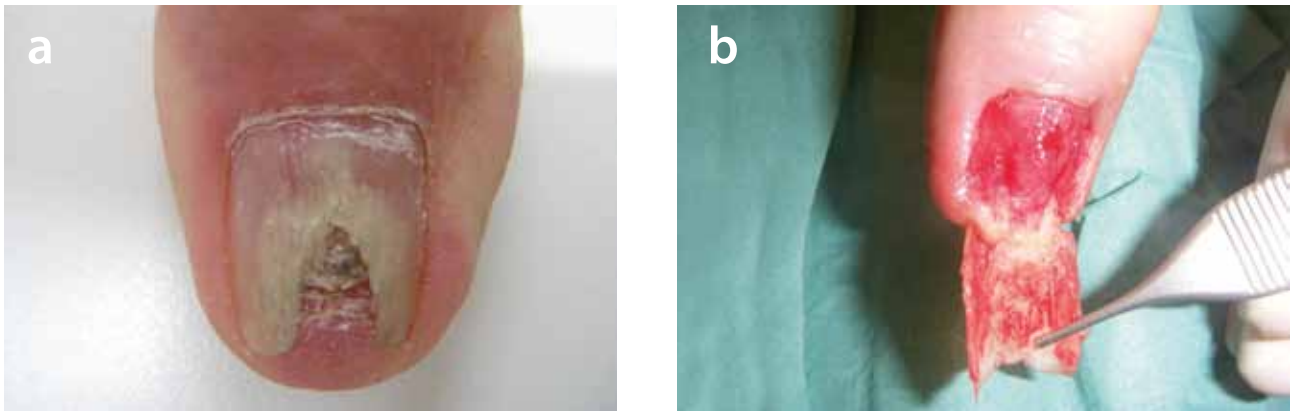

Fig1a - Subungual amelanotic melanoma in a 66-year-old man. The lesion was clinically thought to be a subungual fibrokeratoma (a). During surgery it resembled a subungual squamous cell carcinoma (b) and histopathology finally revealed an amelanotic melanoma of the nail bed, Breslow thickness 0.3 mm.

Eckart HANEKE

Melanoma of the nail apparatus

Gauwerky KJ, Berking C. Das maligne Melanom des Nagelorgans
Dtsch med Wschr 2010;135:1431-34

The incidence of cutaneous melanoma has multiplied in the last decades making up for about 3% of all malignant neoplasms (excluding mucosal, chorioidal and meningeal melanomas). In Germany with its population of approximately 83 million people, about 15,800 new melanoma cases are seen each year. Nail melanomas are a variant of acral lentiginous melanomas (ALM). In the light-skinned Caucasian population, between 1.0 and 3.5% of all melanomas are ungual melanomas. However, ALMs are relatively much more frequent in dark-skinned individuals though their absolute number is comparable to the population with fair complexion. About 11% of their melanomas are in subungual location. The peak incidence of ungual melanomas is between 55 and 65 years of age. Thumbs and big toes are most commonly affected, followed by middle and index fingers. Ultraviolet is not a causative factor.

Whereas about 80% of the cutaneous melanomas are correctly diagnosed by a trained dermatologist, nail melanomas continue to remain a diagnostic challenge (Figs1–7). The diagnostic delay is due to clinical misdiagnosis and concerns post-operative nail dystrophy after biopsy. At the time of first diagnosis, often a thick and ulcerated tumour is already observed, which is probably the cause of the generally poor prognosis of nail melanomas, with 5-year survival rates of only 40-60%.

After Boyer's first description of a "bleeding fungating tumour" in 1834 - with a more than 3 decades long history - few cases were observed in the following 120 years. Melanocytes mainly of the matrix, but also of the nail folds and nail bed, are thought to be the origin of ungual melanomas. Matrix melanocytes may give melanin to the matrix keratinocytes, which store it and finally grow out as a longitudinal brown streak in the nail. This is independent from the nature of the melanocytic process and only reflects the capacity of melanin production. When the melanocytes are located in the proximal matrix, the pigment will be seen in the superficial nail plate layers, whereas those in the distal matrix will deposit their melanin in the deep nail layers. Melanocytic activation, lentigo, naevus or melanoma may be the reason for a longitudinal melanonychia.

Any newly developing brown streak in the nail of an adult has to be checked for melanoma, particularly when it is wider than 3 mm, has blurred margins, is inhomogeneous and asymmetrical. Periungual pigment spread, known as Hutchinson's sign, is a very strong hint of melanoma.

Melanomas of the nail bed and nail walls are more difficult to diagnose as they often remain amelanotic. They may present as a chronic paronychia, ingrown nail, a wart, a bleeding tumour, a pyogenic granuloma or onycholysis.

Non-melanocytic dark pigment may be exogenous such as silver nitrate, tobacco, hair dyes and other cosmetics: it can often be scraped off the surface.

Subungual haemorrhage is very common. It is almost always easily differentiated from melanin. It is never seen in the free margin of the nail in contrast to melanin. It usually grows out with the nail but may be non-migratory when it is only in the nail bed.

Some fungi produce melanin, which varies in its molecular structure from human melanin. Most commonly it is seen as a dark spike with its broad base being at the free margin of the nail. Fungi are easily identified in nail clippings stained with PAS or Gomori methene amine silver stain.

To facilitate the diagnosis of (pigmented) nail melanomas, an ABCDEF rule has been established. A stands for age, Afro American and Asian people; B for brown band and breadth wider than 3 mm; C for change in width, pigmentation and morphology; D for digit (thumb, big toe, index, middle

Eckart HANEKE

Melanoma of the nail apparatus

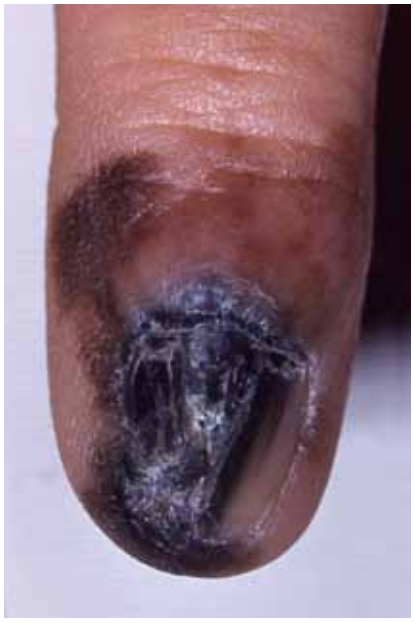

Fig1 - Long-standing pigmented melanoma with Hutchinson's sign and nail dystrophy.

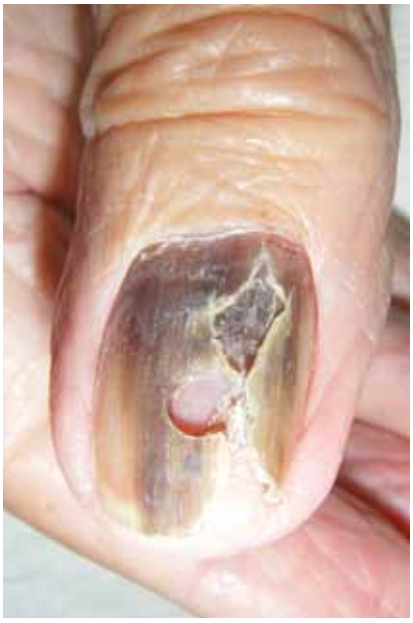

Fig2 - Early invasive melanoma of the matrix with wide longitudinal melanonychia. A piece of nail had been removed by the referring dermatologist; however, this only showed melanin and did not allow the diagnosis of subungual melanoma to be made.

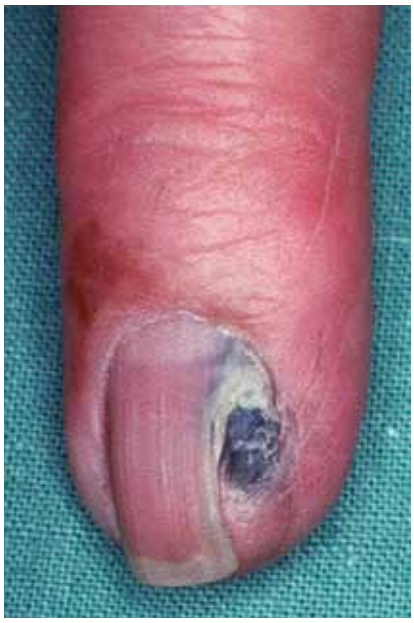

Fig3 - Pigmented nail bed melanoma with Hutchinson's sign. Note that there is no longitudinal nail pigmentation as the tumour is located in the nail bed.

Fig4 - Pigmented melanoma on the lateral aspect of the 4th toe.

finger); E for extension (Hutchinson's sign); and F for family history of melanoma or dysplastic naevus syndrome. However, clinical history and close and skilful examination are the mainstays of a correct diagnosis. If there is any doubt a biopsy should be performed.
For many decades, amputation of the digit at different levels was the treatment of choice. However, comparison of patients who underwent amputation or functional digit-preserving surgery, showed that patients who were operated more conservatively not only had a better quality of life but also better survival rates. A sentinel lymph node excision is recommended in tumours thicker than 1 mm. Further treatment depends on tumour thickness and clinical stage as in other cutaneous melanomas. Duration of follow up should be 10 years.

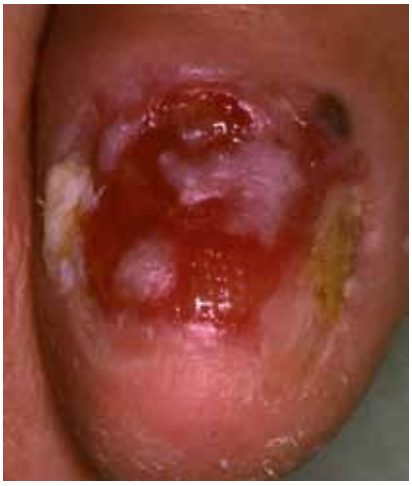

Fig5 - Sparsely pigmented advanced melanoma with ulceration of the big toe nail.

Fig6 - Melanoma of the hyponychium mimicking an infectious process.

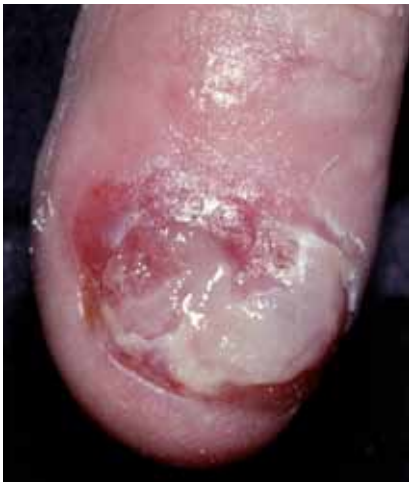

Fig7 - Far advanced amelanotic melanoma of the nail apparatus.

COMMENTARY E. HANEKE

This is a short overview for a journal devoted to general and internal medicine. The authors collected their wisdom from the literature without adding any personal note or experience. That is why it is not surprising that no new results are discussed or new ideas brought forward. However, it is a useful article as virtually all patients are first seen by general practitioners and they have to be alerted to the problem of ungual melanomas. It is not necessary for them to make the correct diagnosis, but they must be trained to send a patient to the right specialist - and a patient with a nail problem requires a dermatologist. Further, as outlined by these authors, there is also a lack of knowledge among the dermatologic community about nails in general and nail melanomas in particular. We are pleased to see that the more conservative approach to functional surgery that we have proposed for more than 35 years [1, 2], has now also reached Germany's biggest department of dermatology.

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Eckart HANEKE

Simple onycholysis: An attempt at surgical intervention

Dominguez-Cherit J, Daniel RC.. *Dermatol Surg* 2010;36:1791-93

Onycholysis is a common and often frustrating condition due to a variety of factors and diseases. The authors define "simple onycholysis" as the type due to trauma, contact irritants, moisture and allergens, thus also cosmetically induced onycholysis. Loss of nail bed adherence due to psoriasis and other inflammatory skin disorders, dermatophyte infection, parasites, neoplasms and inherited or familial forms, are excluded. Although there are many articles dealing with the medical treatment this often remains unsuccessful. On the other hand, long-term onycholysis leads to shrinkage of the nail bed seen by epidermis reaching under the onycholytic nail. This condition was also called the disappearing nail bed. After having successfully reattached the nail plate to nail bed with a free hard palate mucosal graft in a nail with intact matrix [1] this technique was employed for the therapy of simple onycholysis.

Under general or local anaesthesia, a 1- to 2-cm graft without periosteum was taken from the hard palate (e.g. by an otolaryngologist or a maxilla-facial surgeon) while the dermatologist removes the unattached nail and takes out the disappearing nailbed or scar, down to the phalangeal bone. The mucosal graft is placed into the nailbed defect and sutured with 7-0 Vicryl (Fig 1). It is kept in place with a tie-over dressing which is left for 48 to 72 hours or as long as 10 days. An oral apposite is used for the donor site, which heals by secondary intention. This is usually complete after 10 days. Analgesics are used for the postoperative period. The stitches are removed after 10 days. The rate of complications is very low.

The authors recommend this technique as a potential alternative to medical treatment of persistent finger onycholysis. The cosmetic results are good (Fig 2). They do not consider taking a mucosal graft from the hard palate to be inadequately aggressive.

COMMENTARY E. HANEKE

This is a very elegant technique for the treatment of persistent recalcitrant simple onycholysis. We agree with the authors that taking a mucosal graft is not overaggressive; in fact, this is a routine technique in maxillo-facial surgery. The authors chose the hard palate because it exhibits a low keratinisation. Whether other donor sites may also be successful remains to be shown. Ogo [2] claimed that full-thickness skin grafts would enable full nail bed regeneration in contrast to split-thickness grafts that did not allow nail bed regeneration.

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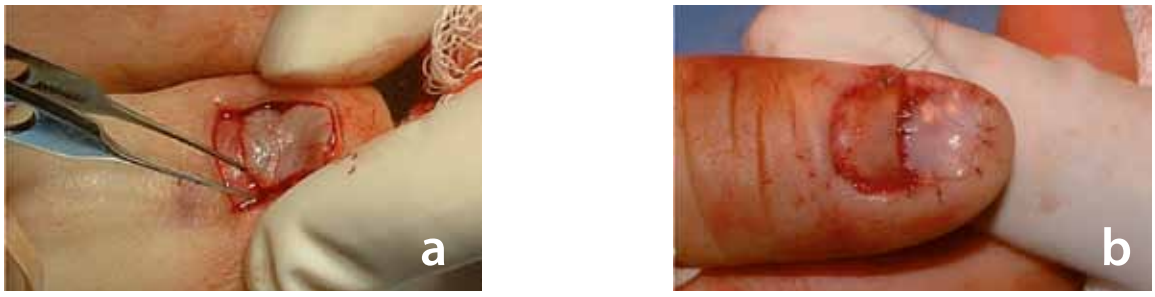

Fig1 - The mucosal graft is placed on the defect (a) and sutured into place (b) (Coll J Dominguez Cherit).

Fig2 - Simple onycholysis before (a) and 7 months after surgery (b) (Coll J Dominguez Cherit)

Nail matrix phenolization for treatment of ingrowing nails: Technique report and recurrence rate of 267 surgeries

Di Chiacchio N, Belda W, Jr, Di Chiacchio NG, Gabriel FVK, Cadore de Farias D. *Dermatol Surg* 2010;36:534-37

Ingrown nails are probably the most commonly painful nail conditions in adolescents and young adults (Fig 1). They may considerably interfere with daily life and sports activities and thus markedly reduce the quality of life. There are probably more than 100 different techniques described in the literature and new methods continue to be reported, but matrix horn phenolisation is the most commonly performed and effective method.

The senior author performed 267 matrix horn phenolisations in 172 patients in his private practice between April 2005 and February 2007. All were submitted to exactly the same technique: after disinfection with 70% alcohol, a distal block anaesthesia was performed with 2 ml of 2% plain lidocaine. A tourniquet was placed and the granulation tissue removed with a curette. The lateral ingrown nail strip was detached from the nail bed and the overlying nail fold with a nail elevator, cut longitudinally and taken out. Matrix horn, nail bed and lateral nail fold were gently curetted and a cotton swab used to dry the surgical field. Then the matrix was treated by vigorously rubbing 88% phenol into the matrix horn for 2 minutes (Fig 2). The wound was cleaned with alcohol and dried, the tourniquet removed and a sterile dressing with antibiotic ointment applied. The patient was instructed to keep his foot up for a day and analgesics given. The patient returned the next day, the dressing was removed, the wound cleaned with an antiseptic bath and antibiotic ointment applied. The patient was told to repeat this twice daily until the wound had healed, usually after 2 to 4 weeks.

Patient evaluation was performed after 10, 30 and 60 days. A telephone interview was carried out in August 2005. Of the 172 patients, 145 could be contacted, 32 personally, 113 by phone. All 267 procedures were performed on the big toes. Post-op follow up ranged from 6 to 33 months. No complications were observed. Five recurrences were seen, all between 2 and 4 months after surgery. Three patients were re-operated.

The author's recurrence rate of 1.9% is in accordance with many other publications on the treatment of ingrown big toenails by selective phenolization of the matrix horns. In contrast to cold steel surgery, this approach has a very low recurrence rate, and negligible post-surgical morbidity. Patient acceptance is therefore very high. The esthetical aspect of the nail is very good provided not too much of the nail matrix was phenolised (Figs 3 & 4).

COMMENTARY E. HANEKE

Liquefied phenol can easily be prepared in any dermatological practice by gently melting 100 g of crystallised phenol in a water bath at around 45°, then slowly adding 9.1 ml of deionised water whilst stirring. When it cools down it remains liquid, hence its name liquefied phenol.

In recent years, sodium hydroxide at 10 or 20% was also used to necrotize the lateral matrix horn. These authors claim that NaOH cautery is equivalent to phenol in terms of success, but shows more rapid healing than phenol cautery. This is certainly not a question of the substance used to necrotize the matrix, but the depth of necrosis. Whether a chemical substance is used - electrocautery, radiofrequency or laser vaporisation - is not critical provided the matrix necrosis is controlled: not too deep, but also not too superficial. In contrast to selective surgical excision of the matrix horn where no necrotized tissue remains, this method leaves necrotic debris behind that has to be eliminated.

Phenol has 3 good properties for the treatment of ingrown nails: it is a protein coagulant that can cause matrix epithelium damage, it is a very potent disinfective agent allowing heavily contaminated or even infected toes to be treated without risk and it has a mild local anaesthetic action, which reduces post-operative pain. This combination of positive properties makes it for us, the ideal cauterant for selective matrix horn removal in ingrown nails.

There are, however, some critical points concerning wound healing: as the authors describe, the toe has to be treated with antiseptic soaks (twice) daily. We have seen

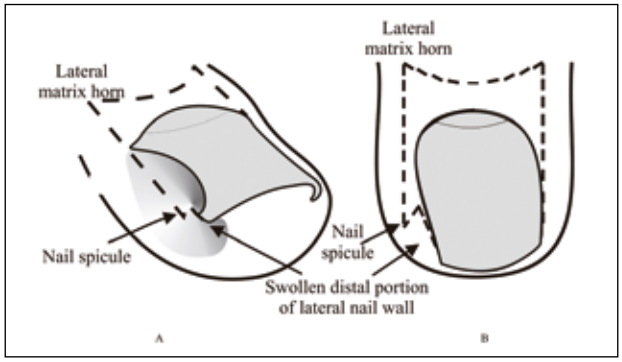

Fig1 - Schematic illustration of an ingrown nail.

Eckart HANEKE

Nail matrix phenolization for treatment of ingrowing nails: Technique report and recurrence rate of 267 surgeries

that cleaning the wound from debris and dried secretion, either by using a shower or the jet of a Water-Pik®, removes the dead material from the wound cavity and considerably speeds up healing. Another group showed that dabbing the cauterised matrix with 20 to 40% ferrichloride shortens the healing period by at least one quarter, and using xylocaine with adrenaline also speeds up healing compared to plain lidocaine.

Unfortunately, ingrown nails are still often left to be operated by junior staff, which reflects high recurrence rates owing to a lack of experience. The very low relapse rate of the authors is certainly due to the fact that the senior author, an experienced nail surgeon, performed all the procedures himself.

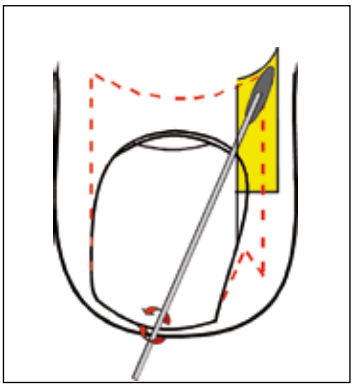

Fig2 - Schematic illustration of the phenolization procedure.

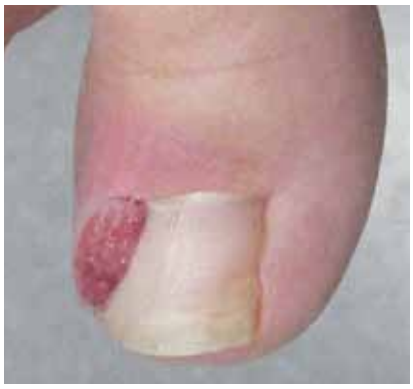

Fig3 - Ingrown nail.

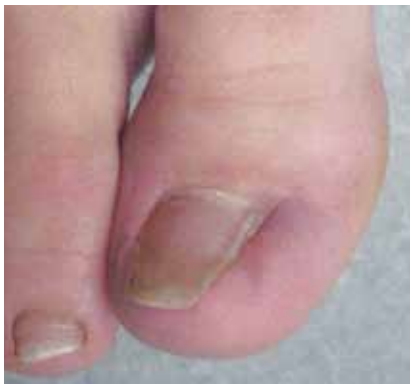

Fig4 - Ingrown nail after phenolization

Morphologic study of normal, ingrown and pincer nails

Kosaka M, Kusuhara H, Mochizuki Y, Mori H, Isogai N. *Dermatol Surg* 2010;36:31-38

Compared with normal nails, ingrown and pincer nails are usually considerably more curved and thus appear smaller when looking at them from above. Whereas an ingrown nail is a symptomatically derived term, pincer nail designates a morphological abnormality. The authors examined normal, ingrown and pincer nails for their width along the longitudinal axis in order to find out whether the nail narrows or keeps its original width while overcurving.

The width of 53 avulsed pincer nails was measured with a tape measure in 5mm-intervals beginning from the proximal end of the nail plate. For comparison, 20 normal, ingrown and pincer nails were measured. For statistical reasons, body height and weight as well as nail height were assessed directly and nail angle and osteophyte height were measured with a calliper. The latter allowed the nail width (nail tip width/nail root width) and nail height indices (nail height/nail tip width) to be calculated.

The nail height increased from 3.1 mm (1.0 - 6.0) in normal nails to 4.0 mm (2.0 - 7.0) in ingrown nail, to 7.1 mm (4.0 - 10.0) in pincer nails. The osteophyte height increased from 0.5 mm (0 - 2.0) to 0.8 mm (0 - 1.4) to 2.4 mm (0.9 - 5.3), respectively. The width index decreased from 98% (80 - 108.5) to 94.9% (78,6 - 112.5) to 51.1% (31.8 - 70.0), respectively and the height index increased from 21.6 to 27.6 to 107.2%, respectively.

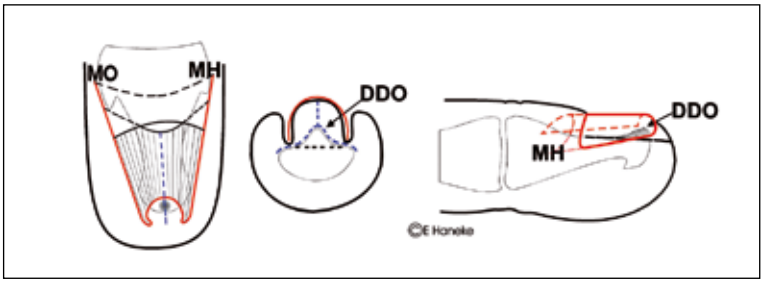

Fig1 - Schematic illustration of the genetic type of nail overcurvature. There is a gradual increase in width of the base of the distal phalanx by bone apposition, which is more pronounced on the medial side (MO) thus pushing the matrix horn (MH) distally on the medial aspect and uncurving the nail proximally while compensatorily overcurving it distally. This also heaps up the distal nail centrally thus pulling at the bone, which results in a traction osteophyte of the distal dorsal tuft (DDO).

The differences were statistically significant with respect to nail height, osteophyte height, nail angle and height indices (Fig 1). The authors state that there is a terminological confusion between ingrown toenails, incurvated nails and pincer nails. The nail bed narrows in pincer nails because the nail plate rolls under, thus pinching the nail bed; however the dorsal surface of the pincer nail does not shrink as can also be demonstrated with a paper model.
Obesity was described as an aetiological factor in incurvated nails, however, the comparison of height, body weight and body mass index did not reveal apparent differences between the three groups.
Ordinary ingrown nails are morphologically not distinct from normal nails.
Over 50 years, osteophytes of the distal dorsal end of the distal phalanx (processus unguicularis) have been described. Whereas DuVries thought that the osteophyte causes the overcurvature, others see them as the result of the nail bed pinching [2, 3]. However, small osteophytes were also seen in normal controls by the authors and they did not observe a meaningful correlation between nail height and osteophyte height. This is seen by the authors as a confirmation that the osteophyte of the distal phalanx is not the cause of, but rather the result of the overcurvature [2-4].

The authors speculate about the mechanism of incurving. As the nail width remains stable they suggest that the matrix is normal. According to Forslind and Thyresson [5] the dorsal nail plate is hard and the ventral plate is elastic. An unknown factor may cause nail bed shrinkage, constriction or both. The ventral plate subsequently begins to shrink - while the dorsal plate remains normal - the difference between the unaffected dorsal layer and the affected ventral layer is thought by them to lead to a distal inward twisting.

COMMENTARY E. HANEKE

The authors studied a large number of normal, ingrown and pincer nails for their width and height and performed lateral X-rays. As expected, they found that the incurvated nail keeps its dorsal circumference and does not get narrower. They measured the nail height and osteophyte height clinically and radiographically and found that they are greater in pincer nails, which is to be expected. They also ruled out body height, weight and BMI as aetiologically related to pincer nails. Until this point, the study is reasonable. Unfortunately, the authors missed one crucial point: they did not look for the shape and alignment of the entire distal phalanx and its base and they did not do - or report - vertical radiographs. If they had done this their conclusion would certainly have been different concerning the pathomechanism of incurving. Furthermore, their paper model would have been different. They also did not mention the various forms of pincer nails, of which the genetic one is the most common and to which they apparently refer to in their article.
Our systematic radiological studies have shown that all patients with the genetic type of pincer nails, which is the symmetrical one usually affecting the big toenails and often various lesser toenails, exhibit a broad base of the distal phalanx [2-4]. This is often associated with a lateral deviation of the distal phalanx of the big toe and even more of the long axis of the nail, whereas the lesser toes when affected, exhibit a medial deviation [2]. The broad base of the distal phalanx to which the matrix of the nail is firmly attached, uncurves the proximal portion of the nail, which results in compensatory overcurvature of the distal nail. When the nail uncurves proximally, it overcurves distally and its central part heaps up from the nail bed while pinching the nail bed [2]. The distal nail bed and the hyponychium are fixed to the

Eckart HANEKE

Morphologic study of normal, ingrown and pincer nails

processus unguicularis with ligament-like fibrous bands that pull the bone up causing the traction osteophyte (Fig 2). As the base of the distal phalanx develops osteophytes on both sides with the medial being larger than the lateral ones, the big toenail matrix is pushed distally on its medial aspect causing the lateral deviation.
A simple paper model can explain the mechanism of distal overcurvature due to proximal uncurving.

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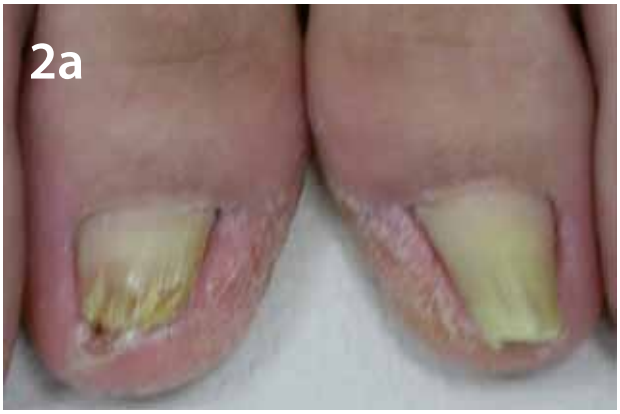

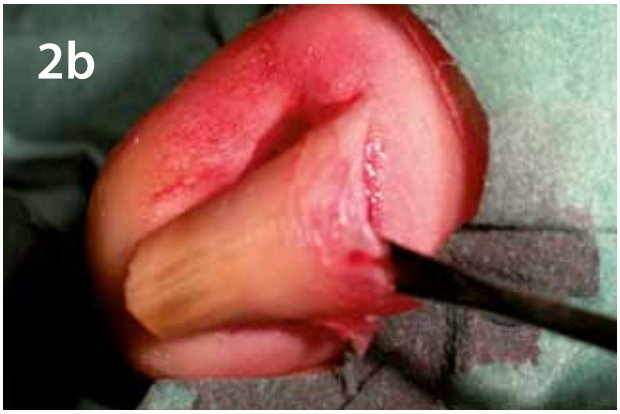

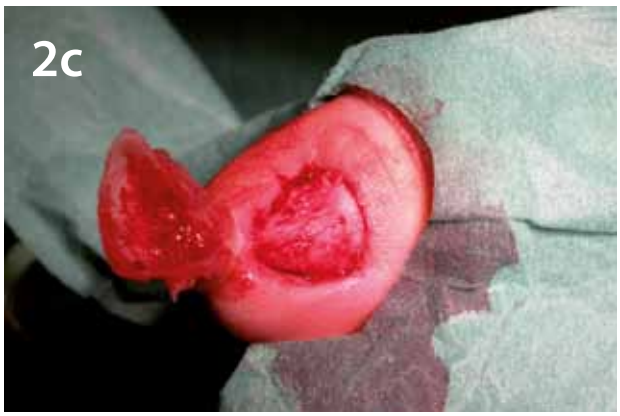

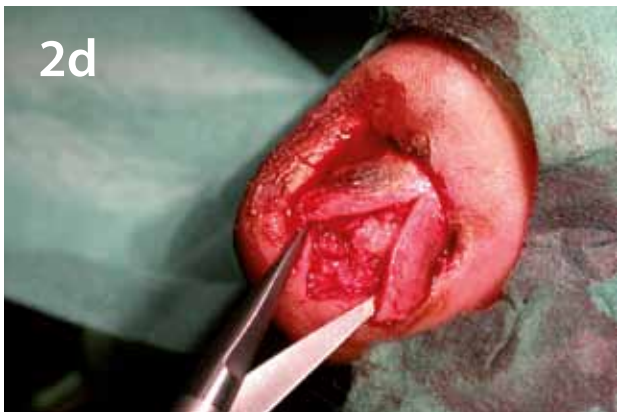

Fig2 - Pincer nail in a young female patient.2a: Preoperative view
2b: The nail has been partially avulsed proximally showing the proximal medial and lateral corners of the nail corresponding to the matrix horns.
2c: The nail is completely avulsed demonstrating the small, distally pinched nail bed.
2d: After medial longitudinal incision of the nail bed and dissection from the bone the distal dorsal osteophyte has been removed yielding a plane surface.

Symmetrical nail bed uptake on a 99mTc-HDP bone scan in a patient with Wegener's granulomatosis

Dejanović D, Widding Høyer A, Mortensen J, Højgaard L. *Eur J Nucl Med Mol Imaging* 2010; 37: 410

A man aged 48 with diffuse pain in his extremities and involuntary loss of weight underwent a 99m Tc-HDP bone scan. This latter exploration was negative for the whole body except a rare symmetrical uptake in the nail bed of all fingers and toes. Clinical examination of the extremities did not show any visible alteration.
Subsequently, Wegener's granulomatosis was diagnosed. Treatment with systemic corticosteroids and cyclophosphamide for seven weeks, showed a slight decrease in the uptake intensity of nail beds on a new bone scan.

The authors emphasize that the typical nail fold pathology (linear infarcts of the proximal nail fold) very common (> 90% of cases) in Wegener's granulomatosis, is caused by avascular areas, irrespective of the presence or not of clinical digital vasculitis. Hypoxia and ischemia may result in calcium deposit with 99mTc-HDP increased uptake. Conversely, finger clubbing secondary to an increased vascularization may sometimes also be detected in a bone scan.

COMMENTARY J-M. MASCARO
Over the last decades a massive development of technological advances with applications in medicine has occurred. Non-invasive exploratory methods of diagnosis have opened a wide spectrum of possibilities even though, when a new one appears, its precise usefulness is often not evident until there is a clinical confirmation of its indications and restrictions. Dejanović et al's short paper is relevant because it shows how nail bed vascular alterations can precede other more evident manifestations and therefore, in some precise cases performing a total body 99mTc-HDP bone scan can be of some help. However we should not forget that most of these new techniques are expensive, directly for the patient or for the Health System. For this reason the relevance of nail bed vascularity alterations in systemic diseases does not justify routinely performing these expensive studies in all patients when the doctor has no clear orientation of diagnosis. We must remember the wise old expression "who does not know what he / she is looking for, does not understand what he / she finds ".

Nailfold capillary microscopy in adults with inflammatory myopathy

O'Callaghan S, Fonollosa-Pla V, Trallero-Araguás E, Martínez-Gómez E, et al *Semin Arthritis Rheum* 2010; 39:398-404

Alterations of nailfold capillary morphology have been reported in dermatomyositis-polymyositis (DM-PM) as well as the association of severe vascular modifications and arthritis, pulmonary involvement and Raynaud phenomenon (RP). However as there are only very few studies of adults suffering from DM-PM, Selva-O'Callaghan et al. have made a detailed nailfold capillaroscopy (NC) research into patients with inflammatory myopathy (IM): DM, PM and inclusion body myositis (IBM) Fifty-three white adult patients (42 women, median age 50) with IM were studied: 29 had DM; 14 PM; 1 myositis overlap syndrome; 6 cancer associated myositis and 3 IBM. Nailfold capillaroscopy was performed by blind investigation looking for a semi quantitative evaluation of capillary density, length variability, morphological abnormalities and microhemorrhages.
From these 53 patients, 23 (43%) had relevant capillaroscopy changes (note that 16 suffered from RP). Capillary length variability was detected in all and irregular distribution of capillary array in 49 (92%), morphologic capillary abnormalities (tortuous or meandering together) in 49 (92%) and ramified in 37 (70%). Twenty two (42%) had microhemorrhages and 23 (43%) mega capillaries. Eight (15%) had capillary loss (less than 7 per mm) and

Jose Maria MASCARO

Nailfold capillary microscopy in adults with Inflammatory myopathy

5 with DM and finally 3 with cancer had severe capillary derangement. Only 7 out of 40 healthy controls had some minor abnormalities i.e.tortuous or meandering capillaries but no other alterations or microhemorrhages.

Comparison of PM and DM showed that the combination of microhemorrhages and mega capillaries represented the characteristic pattern in DM, but not in PM. This aspect is consistent with the microvasculopathy and capillary involvement in muscle biopsies of DM where the main target seems to be the vascular endothelium. No association was found between the number of capillary alterations and disease duration. Even though the number of patients was small, it was interesting to note the association of severe capillary derangement pattern and paraneoplastic myositis. RP was significantly associated with a higher number of capillary alterations but not with capillary density variations. Interstitial lung disease was significantly associated with a capillary score (= or > than 4 alterations).

The common observation of microhemorrhages and not capillary loss in patients with IM and RP, really differs from the findings in RP associated with systemic sclerosis and suggests a different pathophysiological mechanism in both circumstances.
IM are considered auto-immune diseases. However, in contrast with other studies that have shown correlation between nailfold capillaroscopy (NC) and a specific autoantibody profile in systemic lupus erythematosus (SLE) and systemic sclerosis (SS), Selva-O'Callaghan et al did not find any link with NC and specific (antisynthetase) or associated (anti-PM/Scl) myositis autoantibodies.
A statistically significant association between the disease activity and severity and capillary score was found, with greater activity and severity in patients with a large number of capillary alterations.

It is important to note the potential relationship between capillary anomalies and organ involvement. Endothelial damage (translated by an increased TGF-b) has been found related to intertitial pneumonitis and this is coherent with the findings of the authors of capillary score and lung disease. This could indicate that capillaroscopy findings may be helpful as an indicator of interstitial lung disease in patients with IM. There is a need for a larger study of patients with paraneoplastic myositis to confirm the interesting results of a severe capillary derangement.

COMMENTARY J-M. MASCARO

Nailfold capillaroscopy is a well known and widely used non-invasive method of evaluating patients with connective tissue diseases. From the results of the present study we must emphasize the relevance of some particular points:

1- DM and PM have a different NC pattern. DM is characterized by microhemorraghes and megacapillaries similar to microvascular alterations on the muscle; vascular endothelium would be the main target in both tissues.
2- The probable relationship between capillary anomalies and cancer or organ involvement is an interesting assumption. Association of severe capillary derangement and paraneoplastic myositis, as well as the significant association of interstitial lung disease with high capillary alteration scores, show how NC may become an indispensable prognostic technique.
3- RP associated with IM shows microhemorraghes and not capillary loss, a very different NC pattern of the PR linked to SS. This supports the premise that RP is a non-specific phenomenon resulting from different pathophysiological mechanisms.

From the study of Selva-O'Callaghan we can conclude that NC, a relatively simple non-invasive technique, could provide worthwhile information in connective tissue diseases, not only helpful for an early diagnosis, but probably useful to recognize organ involvement or cancer association. For those doctors, at times dermatologists, who undervalue the importance of nail observation and pathology, it is interesting to note how nail fold microvascularisation, which is easy to study, may offer such rich information.

Jose Maria MASCARO

Acute selenium poisoning by paradise nuts *(Lecythis ollaria)*

Nüller D, Desel H: *Human Exp Toxicol* 2010; 29: 431-34.

Selenium poisoning is at the present time very uncommon. However, it has been suggested that this element could play a protective effect on cardiovascular diseases and even on cancer. Diverse compounds and dietary supplements rich in this element are available.

The authors report selenium intoxication in two previously healthy women aged 46 and 38, who worked in the same office and developed their disease with a six week interval. First manifestations were nausea, vomiting, headache and dizziness for several days followed two weeks later, by massive hair loss and greyish discoloration lines on all fingernails. Both patients had diffuse alopecia with dystrophic hairs on the trichogram. Different treatments had no effect on either of them. A careful questioning revealed that both patients ingested quite a large quantity ("a handful portion") of "paradise" nuts *(Lecythis ollaria)* that are selenium rich, when they visited an oil mill. They were the only visitors that day who ate those nuts and none of the others presented any health problems. Two months after their manifestations began, a suspicion of the cause of their disease was raised. Plasma selenium level was found very high in comparison to the normal range of 74-139 mg/L (479 mg/L 1st case; 300 mg/L 2nd case). Determination of other possible toxic agents (thallium, arsenic) was negative. Without any treatment, the selenium levels progressively decreased and finally normalised; clinical manifestations also gradually improved and returned to almost normal 12 months later.

The maximum proposed selenium daily intake has been established at 50 mg/day. It appears that the average of selenium intake and body-burden is related to the content in the local soil. Inhabitants of the regions of very low selenium soil content suffer from selenium deficiency: Keshan disease, a cardiopathy associated with a low level of 20 mg/L, and Kashi Beck syndrome, a dystrophic osteoarthrosis and spondylarthrosis, have been described in China. But on the other hand, outbreaks of human selenosis have also been reported in that country. Changes of hair, loss of hair and nails, amaurosis and ataxia may occur. Toxicity of selenium rich plants is well known and occurs mostly in visitors that are not aware of the risk of selenium rich fruits (as the two women reported in this paper); *Lecythis ollaria* nuts are very rich in selenium when grown in South America's rich grounds.

In summary, hair loss and nail discoloration are important signs to take into consideration, together with general alterations when attempting to recognize selenium poisoning.

COMMENTARY J-M. MASCARO

Many elements of Mendeleiev table have an imaginative name, coined centuries ago on archaic or mythological bases. Selenium from Selene, the Moon's Goddess, is an example (another curious one would be antimony which, according to an unproven legend I heard from my mentor professor Duperrat, the Greek term *antimonachos*, or *antimoine* in French, came from the fable by which monks alchemists died after ingesting it). It is well known that many elements are extremely important as catalysts or cofactors of several biological functions. There are studies that show a possible protective role of selenium in some severe conditions (cardiovascular diseases, cancer). However, uncontrolled supplementation, as well as the availability of dietary selenium rich products or food-goods (like "paradise" nuts), may represent a conclusive risk for healthy individuals. From the paper of Nüller and Desel a few points could be emphasized:

1- The difficulty of diagnosis of intoxication from an unusual agent. Some centuries ago the origin of poisoning was hate, revenge and grudge. At the present time, with some exceptions (suicide or murder) intoxication is mostly accidental and the causal agent difficult to identify. Careful questioning is a must (profession, hobbies, food habits, travel…)

2- The skin, as well as hair and nails, may reflect alterations on metal and non-metallic element intoxications. This must be taken into consideration by general practitioners who are those first involved in the diagnosis of a patient with general symptoms (hair and nail could also be checked to verify the stored amount of some toxic agents, as in arsenic poisoning).

3- The consumption of 7 or more "paradise nuts" has been reported able to produce intoxication. A general rule would be to always consume rare food-goods (such as fruits) never tasted before, with prudence ; and this not only for a possible toxic effect.

4- Excessive selenium intake may produce non-specific nail alterations (as Mees bands [1] or greyish discoloration [2]). This highlights the need for nail inspection in all medical explorations.

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Bianca Maria PIRACCINI

Diseases mimicking onychomycosis

Allevato MA. *Clin Dermatol*. 2010; 4: 28: 164-77.

This article reviews almost all nail diseases, dividing them into: inflammatory, infectious, genodermatosis, traumatic, tumours, systemic, paraneoplastic, collagenopathies, and drug-induced. The clinical features are detailed and histological features mentioned, especially for nail psoriasis and lichen planus.

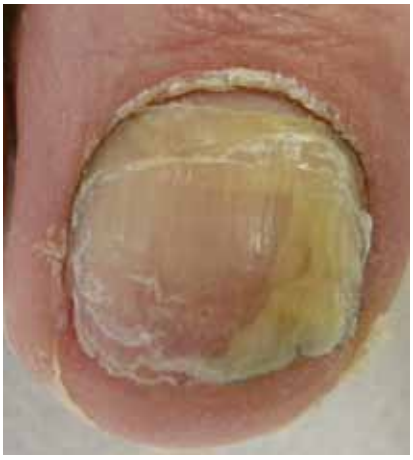

Fig1 - Onychomycosis due to Trichophyton rubrum of the big toenail producing lateral onycholysis and subungual hyperkeratosis.

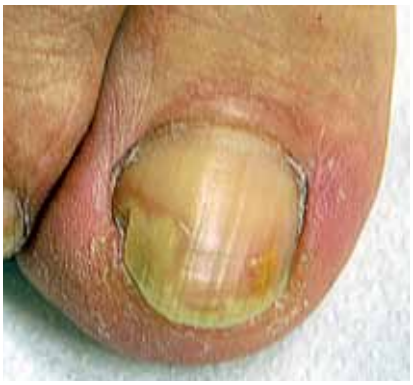

Fig2 - Traumatic onycholysis of the big toenail shares the same symptoms as onychomycosis of Fig.1.

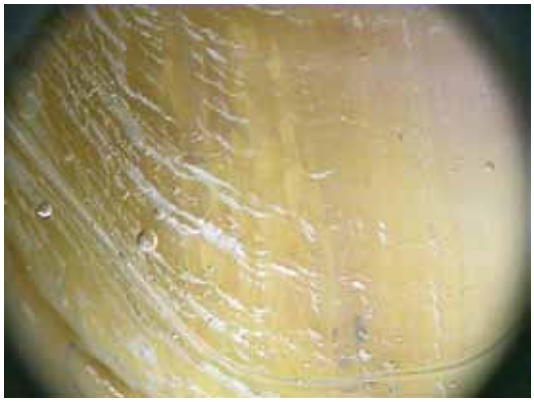

Fig3 - Videodermoscopy of the nail of Fig 1 shows a jagged edge that is typical of onychomycosis.

COMMENTARY B-M. PIRACCINI

The title of the article is a bit tricky, since the reader expects to learn about diseases mimicking onychomycosis and they end up reading a review on all nail diseases! Moreover, it is difficult to understand how a disease may mimic onychomycosis from looking at the article pictures: they are all mixed up! Perhaps the author or the editor did not notice that most of the pictures do not correspond to their titles! Each clinical type of onychomycosis has diseases to take into account in differential diagnosis, but this is especially true for distal subungual onychomycosis, the most common clinical variety of fungal nail infection. Distal subungual onychomycosis usually causes onycholysis and subungual hyperkeratosis of one or both big toenails (Fig 1), and traumatic onycholysis and hyperkeratosis of the hallux is the first disease to differentiate (Fig 2). Psoriasis of the nail may be limited to the toenails, and induces a mild hyperkeratosis associated with onycholysis. Mycology is necessary for differential diagnosis, which can be made easier by the use of a dermatoscope that enhances visualization of the colour and margin of the onycholysis. In onychomycosis the proximal margin of the onycholytic area has a typical jagged edge that reflects progression of the fungal hyphae along the nail bed's horny layer (Fig 3).

Do not forget that a diagnosis of onychomycosis does not exclude a nail psoriasis. When the diseases are associated, the nails do not become clinically normal after a mycologically successful treatment.

Bianca Maria PIRACCINI

Nail involvement in Epidermolysis Bullosa

Tosti A, Cadore de Farias D, Murrel DF. *Dermatol Clin*. 2010; 28: 153-7.

Nail involvement has recently been included among the criteria for scoring epidermolysis bullosa (EB) severity.
This article reviews nail changes in EB, providing both a clinical description of the possible symptoms and giving data of frequency and types of nail signs in the different varieties of EB.

Nail dystrophies are very common and severe in junctional EB. Their severity varies in dystrophic EB and is usually mild in EB simplex.

The most common nail sign of EB is pachyonychia, or nail thickening, characterized by short, thick and discoloured nail plates, usually affecting several nails. This may be observed in all types of EB, while onychogryphosis of the big toenails occurs only in EB simplex and junctional EB.

A typical sign of all EB is nail blistering, with periungual or subungual bullae leading to hemorrhagic onycholysis (Fig 1) and paronychia with subsequent onychomadesis. Nail loss may be followed by regrowth of a normal or a dystrophic nail, or even no nail at all. The presence of periungual granulation tissue is characteristic of junctional EB, particularly Herlitz EB, where it appears shortly after birth. Nail atrophy and anonychia due to nail scarring are never seen in EB simplex, but are not unusual in the other types.

COMMENTARY B-M. PIRACCINI

We usually observe nail dystrophy due to EB as we already know the diagnosis, since the patient is referred to us for a specific consultation on nails. However, we have to keep in mind that sometimes nails can be the first site of an onset of EB when dealing with a child showing pachyonychia of the toenails. The clinical history should then focus on the presence of nail abnormalities or skin blistering in family members.

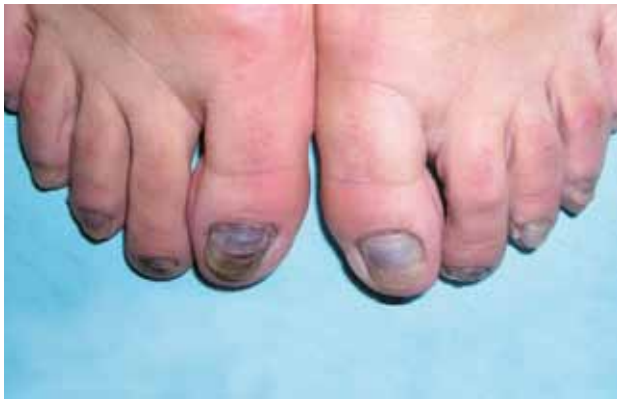

Fig1 - Periungual blisters and hemorrhagic onycholysis in EB.

Bianca Maria PIRACCINI

Treatment of acrodermatitis continua of Hallopeau with TNF-blocking agents: case report and review

Puig L, Barco D, Vilarrasa E, Alomar A. *Dermatology* 2010; 220:154-8

The article reports a case of severe Hallopeau' s acrodermatitis continua involving all 20 nails and periungual tissues, associated with psoriasis of palms, soles, elbows, knees and sacral areas that had a prolonged remission after monotherapy with the TNF inhibitor adalimumab (Humira ®) 40 mg every other week. The patient had been previously treated unsuccessfully with all conventional therapies for psoriasis and pustular psoriasis including the other TNF inhibitor etanercept, associated with methotrexate. Monotherapy with adalimumab 40 mg every other week also proved to be a safe therapy.

The paper then reviews the available literature on the use of biological agents in Hallopeau' s acrodermatitis continua, providing a table that compares the effectiveness in this disease of the 3 TNF-blocking agents infliximab, adalimumab and etanercept, either alone or in combination with acitretin, methotrexate or ciclosporin.

Infliximab always produced an initial remission of Hallopeau's acrodermatitis continua, followed by a relapse due to loss of response or by onset of severe side effects. Etanercept gave variable results. Adalimumab is the only TNF inhibitor effective in all reported cases, with the effective dose of 40 mg weekly.

COMMENTARY B-M. PIRACCINI

Nail involvement is a typical feature of Hallopeau' s acrodermatitis, which is usually limited to one digit. Patients complain of relapsing episodes of acute painful inflammation with pustules around and under the nail plate. Other symptoms include onycholysis, onychomadesis and scaling of the nail bed and periungual skin. Acrodermatitis continua of the nail can also occur in patients with palmoplantar or generalized pustular psoriasis. In these cases, pustules involve the nail and periungual skin of several/all digits, causing severe pain and impairment of manual function.

Treatment of Hallopeau's acrodermatitis continua depends on the number of nails involved: when the disease only affects one nail, topical application of Vitamin D3 derivatives associated or not with steroids is usually effective in preventing relapses, as can be topical tazarotene. Systemic acitretin at low doses (0.3-0.4 mg/Kg/day) is a possible choice for cases that resist topical therapy, as for cases involving several digits.

There are recent reports on the successful treatment of Hallopeau' s acrodermatitis involving several digits, even in children with phototherapy [1], either with narrow band UVB and combination of topical 8-methoxypsoralen plus ultraviolet B [2] or thalidomide and UVB [3].

The use of TNF inhibitors, especially adalimumab, seem safe and effective and should therefore be considered a valid alternative for patients with severe disease resistant to therapy.

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Bianca Maria PIRACCINI

Trichophyton rubrum onychomycosis in a 10-week-old infant

Sachdeva S, Gupta S, Prasher P, Aggarwal K, Jain VK, Gupta S. *Int J Dermatol* 2010; 49: 108-9

The article reports a healthy 10-week-old infant with a distal subungual onychomycosis due to *Trichophyton rubrum* affecting the toenails and one fingernail, which started at the age of 1 month. No predisposing factors were identified and the onychomycosis was cured with the application of ciclopirox topical solution for 3 months.

COMMENTARY B-M. PIRACCINI

Onychomycosis is very uncommon in children, especially in those younger than seven, with a worldwide prevalence always below 1%. The rarity of dermatophyte onychomycosis in childhood is probably due to protective factors typical of that age: rapid nail growth, small contact area of children nails (which means infrequent trauma and minor possibility of fungal colonization), lower incidence of tinea pedis in young age and infrequent exposure to infectious agents in community places. On the other hand, there are factors universally recognized as predisposing to onychomycosis in children: premature birth, Down syndrome, perinatal hypoxia, immunodeficiency, family history of onychomycosis, tinea pedis, practice of a sport activity, frequent use of rubber and leather shoes and finally tinea capitis.

In our nail clinic, family history of onychomycosis is the most common predisposing factor, found in about 50% of the cases and tinea pedis preceding nail invasion is found in 25% of children. Distal subungual onychomycosis is the most frequent clinical feature and usually affects only one digit (a big toe). Clinically, the big toenail shows onycholysis and subungual hyperkeratosis. Involvement of a single fingernail is seen in a quarter of the cases (Fig 1), and is often misdiagnosed as parakeratosis pustulosa or nail psoriasis. White superficial onychomycosis in children affects several toenails and often presents as "deep white superficial onychomycosis", characterized by a deeper nail invasion and a larger surface of involvement than the "classical" white superficial onychomycosis [1]. Proximal subungual onychomycosis occurs both in immunodepressed as well as in healthy children, appearing as a whitish discoloration of the proximal nail plate that extends distally.

Treatment of dermatophyte onychomycosis in children usually requires a systemic drug. Terbinafine is the gold standard, with dosages of 250 mg/day when the weight exceeds 40 kg, 125 mg/day for a weight between 20-40 kg and 62.5 mg daily for children under 20 kg. Treatment duration ranges from 1 to 3 months, depending on finger or toenail involvement, and usually cures the disease. Topical antifungal lacquers are the treatment of choice for white superficial onychomycosis, but can be tried as first treatment in the other types of onychomycosis in the very young. Recurrences of onychomycosis are less common in children than in adults.

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Fig1 - Distal subungual onychomycosis due to *Trichophyton rubrum* of the 5th right fingernail in a child.

Bianca Maria PIRACCINI

Onychomycosis caused by *Aspergillus versicolor*

Veraldi S, Chiaratti A, Harak H. *Mycoses* 2009; 53: 363-5

This is a case report of distal subungual onychomycosis of the big toenail due to *Aspergillus versicolor* cured by 3 pulses of itraconazole.

COMMENTARY B-M. PIRACCINI

It is actually quite strange to see such a simple article published, with no unusual clinical features, when there have been several series of *Aspergillus* onychomycosis published [1], especially as it is not a rare occurrence.

Nondermatophyte moulds account for approximately 10-15% of onychomycosis worldwide, with *Scopulariopsis brevicaulis*, *Fusarium* sp., *Aspergillus* sp., and *Acremonium* sp. being the most frequently isolated fungi [2]. The diagnosis of onychomycosis due to nondermatophyte mould is based on strict mycological criteria, but there are some clinical presentations that are highly suggestive for mould onychomycosis such as proximal subungual onychomycosis associated with periungual inflammation, sometimes with purulent discharge (Fig 1), and deep and severe white superficial onychomycosis. *Scopulariopsis brevicaulis* and *Aspergillus* are the 2 species that cause these particular clinical features.

It is important to recognise the fungus that causes onychomycosis, since non-dermatophyte moulds are usually resistant to all systemic antifungals, and the treatment of choice of these forms is periodic removal of the affected nail plate [3].

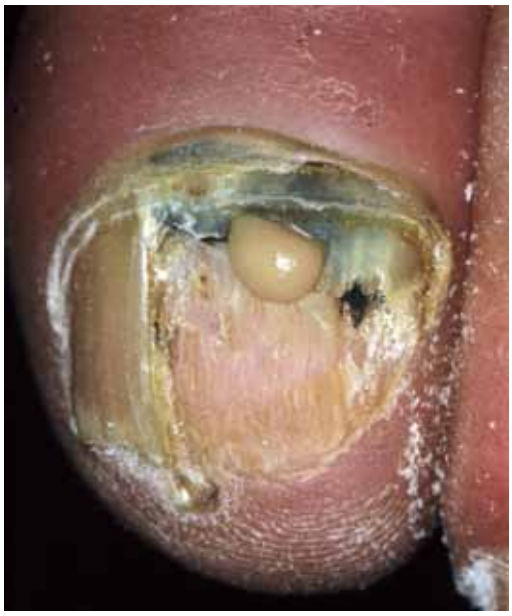

Fig1 - Proximal subungual onychomycosis due to *Aspergillus niger*: acute periungual inflammation with pus discharge. Note the black discoloration due to the pigmented conidial heads of the mould.

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Bianca Maria PIRACCINI

Clinical, mycological and histological aspects of white superficial onychomycosis

Moreno-Coutino G, Toussaint-Caire S, Arena R. *Mycoses* 2009; 53: 144-7

The article is a mycological and histological study of 10 patients affected by proximal subungual onychomycosis and white superficial onychomycosis. Six of the ten patients were HIV positive and 1 suffered from systemic lupus erythematosus. Histology showed the presence of fungal hyphae in the dorsal nail plate in 1 case, in-ventral nail plate in 5 cases and in the whole thickness of the plate in 3 cases.

COMMENTARY B-M. PIRACCINI

The classification of onychomycosis dates back to 1972, when Zaias first described the possible roots of entry of fungi in the nail and the consequent clinical features [1]. More than 25 years later Baran, Hay, Haneke and Tosti made a new classification, which included new patterns of nail invasion and provided an extensive description of histopathology with clinical findings of the various types of onychomycosis [2].

Fungi may/can invade the nail through 3 possible routes:

1- the horny layer of the hyponychium, producing distal subungual onychomycosis;
2- the horny layer of the proximal nail fold, producing proximal subungual onychomycosis; or
3- they can enter the nail plate directly, giving rise to white superficial onychomycosis if the hyphae localise on the nail surface or to endonyx onychomycosis if the hyphae penetrate the distal plate. The involved nail will acquire a white-yellow discoloration with a consequent specific location: proximal or distal, subungual, intraungual, or superficial. The diagnosis is usually easy with careful clinical examination.

Any clinical type of onychomycosis has is own characteristics regarding frequency, age of patients, predisposing factors, responsible fungi and response to therapy.

It is therefore not correct to talk about fungal leukonychia including both proximal subungual onychomycosis (Fig 1) and white superficial onychomycosis (Fig 2), since the two conditions differ greatly from each other!

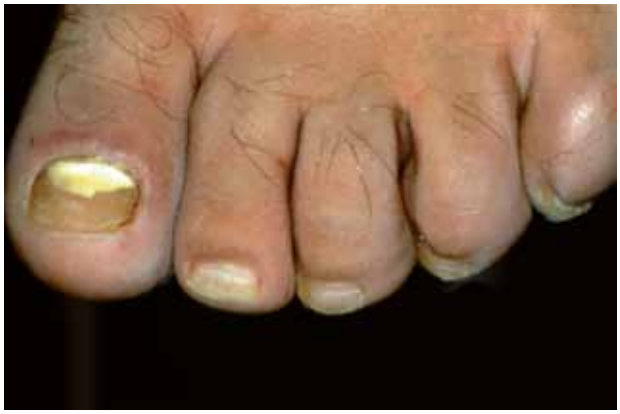

Fig1 - Proximal subungual onychomycosis: fungi penetrate the nail through the proximal nail fold's horny layer and localise in the ventral proximal nail, producing a subungual white discoloration. The nail plate surface is normal.

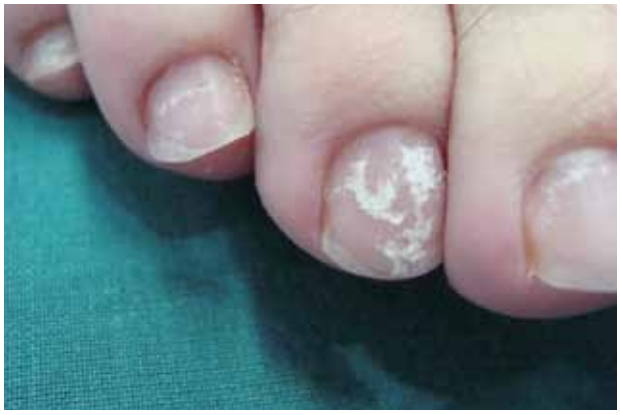

Fig2 - White superficial onychomycosis: fungi parasitize the surface of the nail plate, producing yellow-white patches of friable, opaque, nail plates. (Coll B. Richert, Brussels, Belgium)

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Bertrand RICHERT

A glomus tumour beneath the painful unpolished nail

Anakwe RE, McEachan JE. *Can Med Assoc* J. 2010;182:1329.

This is a case report of a 68-year-old woman presenting with a three-month history of a very painful thumb. There was no history of injury but a hypersensitivity to cold of the affected digit. Examination revealed an extreme tenderness on the nail fold. What was striking is that the patient had well kept and polished nails except the symptomatic thumb that was left unpolished. According to the patient, applying nail lacquer to the nail was too painful. A glomus tumour was suspected and surgical excision undertaken, confirming the diagnosis and alleviating the onychalgia.

A few words are worth noting relating to the major clinical features of glomus tumours:

1- Diagnosis is usually clinical. The classic history is of paroxysmal pain, focal tenderness and hypersensitivity to cold. Patients usually avoid using the affected digit (Fig 1)
2- Plain radiographs can show "scalloping" of the distal phalanx
3- Duplex ultra-sonography or magnetic resonance imaging are particularly useful and enhance the detection of multiple lesions (Fig 2)
4- Differential diagnoses should include osteomyelitis, osteoid osteoma, painful conditions of the nail, malignancy and inclusion cysts
5- Treatment is surgical excision with complete resolution of symptoms. Recurrence is unusual and is most likely to occur with incomplete excision or undetected multiple lesions.

The authors conclude that given the paucity of reliable clinical signs, the diagnosis is suspected on the basis of a complete history, with the complement of imaging.

A painful and unpolished or untrimmed fingernail should alert the clinician to the possibility of an underlying glomus tumour.

COMMENTARY B. RICHERT

The clinical image of this paper reminds us of the main clinical features of glomus tumour. This indicates that pain may be so intense that even pressure from the lacquer brush could be intolerable.

However, it is untrue to say that there is a paucity of reliable clinical signs. There are 3 main clinical tests to diagnose glomus tumours. The first one is the Love's pin test (invented by Dr Love) which is probing with a blunt instrument (paperclip or pencil) to determine the most tender area. Hildreth's test involves applying an inflatable cuff on the arm (over 300 mmHg) and repeating Love's test. The test is positive if the patient does not experience any pain on probing. Finally the cold sensitivity test should increase pain when exposed to the presence of cold (i.e. an ice cube).

A paper from Bhaskaranand & Navadgi [1] revealed that the cold sensitivity test was 100% sensitive, specific and accurate; Hildreth's test was 71,4% sensitive, 100% specific and 78% accurate; and Love's pin test was 100% sensitive and 78% accurate.

Among differential diagnosis of onychalgia the authors forgot to mention the most important one: subungual keratoacanthoma.

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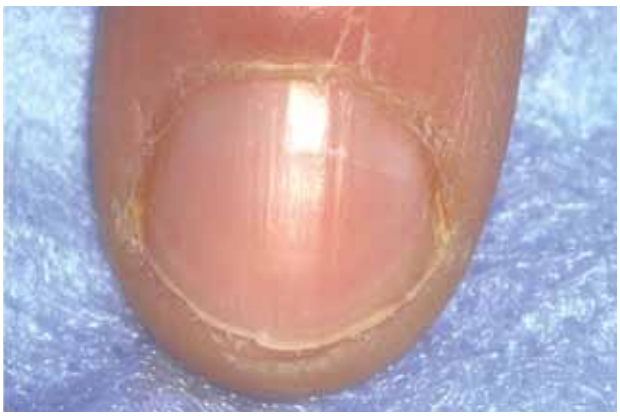

Fig1 - This patient was referred for extreme pain of the distal digit. As nobody could find the cause, she was sent to a psychiatrist. But she heard that there was nail experts in our hospital (Coll J. André, Brussels, Belgium).

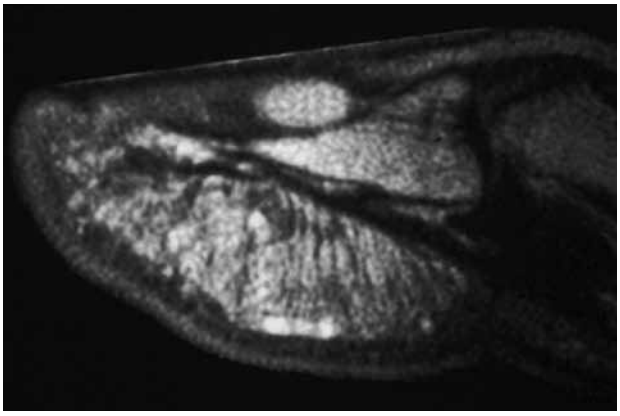

Fig2 - MRI confirmed the diagnosis of glomus tumour (Coll J. André, Brussels, Belgium).

A rare ischemic complication of ingrowing toenail surgery in a child

Rueff N, Gapany C. *Dermatol Surg* 2010; 36:250-2.

This case reports the history of a 10-year-old boy that underwent a surgical procedure for an ingrown toenail. He was given oral antibiotics during the 2 weeks before surgery to help the local paronychial inflammation recede. The procedure was performed under local anesthesia with 1% epinephrine-free lidocaine. Both sides of the nail were removed along with the granulation tissue and the germinal matrix was curetted away.

The tourniquet was removed after the operation. Oral antibiotics were maintained, but after persistent blood oozing for three days, compression with an elastic tape was added by the surgeon. Soon after, the child complained about severe aching, slowly replaced by numbness of the hallux. Blisters appeared on the dorsal aspect of the hallux on day 7. Stitches were removed.

Two weeks after surgery, the hallux had a foul smell and showed humid necrosis. Bacterial swab showed *Staphylococcus aureus* susceptible to the antibiotics given previously that were subsequently discontinued after 3 more weeks of treating what was considered an osteomyelitis. Surgical debridement led to the removal of the distal phalanx, articular cartilage of the proximal phalanx, as well as surrounding soft tissues and closure with a plantar skin flap. The stump healed with no further problem. Fever was never present.

The authors (the surgeons to whom the child was referred to for amputation) claim that the ideal treatment of an ingrown toenail should relieve pain, allow a fast return to normal activities and be inexpensive and safe. Whichever treatment is chosen, organ loss is not acceptable for a benign, albeit painful condition.

The most common complications of surgical treatment for ingrowing toenail are recurrence (12–37%), soft tissue infection (8%) and osteomyelitis (1–2%). Although they cannot exclude a residual infection at the time of surgery, infectious necrotizing cellulitis could not be demonstrated in this young patient i.e. no fever, nor lymphangitis, no elevation of C-reactive protein, nor abnormality of white blood cell count and swabs that only grew S. aureus susceptible to the given antibiotics. Ischemia seems a more plausible explanation. Ischemic events are rare and mostly accidental and no such report has been found in children. Data is lacking to help explain the origin of the necrosis in this patient: no vasoconstrictive agent in the local anaesthesia and the tourniquet was removed (ischemia due to a neglected tourniquet has been reported). Of course, a vascular damage occurred during surgery, responsible for the persistent bleeding leading to an exaggerated compressive dressing.

The authors emphasize that there is no such thing as minor surgery. As for any medical intervention, all measures must be taken to avoid complications, the first being the right indication for the right patient. Unusual complaints must be addressed quickly. Should a complication arise, an honest and thorough explanation to the patient and their family is critical.

COMMENTARY B. RICHERT

This very dramatic case with explicate pictures should remind us:

1- that nail surgery is real surgery, when the authors mention "there is no minor surgery". It's not because it is performed on 1 to 2 square centimetres that it has to be neglected. A minimum of knowledge of the anatomy and basic surgical procedures on the nail apparatus are mandatory.

2- curettage of the matrix is not a good option to remove a lateral horn of the matrix and should be forgotten by orthopaedists. The lateral part of the matrix should either be dissected, as performed in a lateral longitudinal biopsy, or destroyed physically by CO2 laser or radiofrequency (no electrodessication !!) or burnt chemically with 88% phenol [1] 10% sodium hydroxide [2] or 100% tricholoracetic acid [3].

3- when faced with bleeding in a child 3 days after surgery, (not an adult under blood thinners) one should think about vascular damage. The surgeon should have immediately surgically explored the toe to treat the cause. In this case, compressive dressing was not the good option; it precipitated the ischemia. As a rule, we keep all our operated patients with the limb elevated for 15 to 20 minutes in the recovery room before allowing them to return home. If any post-op bleeding occurs, we can immediately take care of it. After 15 minutes clotting has normally occurred.

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Bertrand RICHERT

Topical phenol as a conservative treatment for periungual pyogenic granuloma

Losa Iglesias ME, Becerro de Bengoa Vallejo R. *Dermatol Surg* 2010; 36:675–678

In this study, the authors examined the use of phenol as a treatment option for periungual pyogenic granuloma on 18 patients. Phenol is a weak acid that does not produce full-thickness dermal loss but causes denaturation and precipitation of skin proteins.
Three applications of one minute each were performed consecutively with a piece of cottonwool - proportional to the size of the granuloma - dipped into 98% phenol. At the end of the procedure the granuloma whitens as a result of the protein coagulation. Subsequently, the lesion was covered with 10% povidone iodine and silver sulfadiazine and then wrapped in sterile gauze. The patient was asked to renew the dressing at home daily. Almost no pain was reported during the treatment, presumably due to the anaesthetic effect associated with phenol. Patients were followed up weekly and re-treated with phenol from 2 up to 14 weeks, depending on the size of the original granuloma. This method was successful in the 18 adult patients. Significant improvement was already noted in some patients after one week of treatment. After 14 weeks, all lesions had been resolved in the 18 patients. Depending on the size of the granuloma, patients received more frequent phenol application (weekly) until complete cure. Virtually no scarring was observed at the end of treatment. This conservative approach using a proteolytic agent is easy to perform, fairly inexpensive and almost painless for the patient. However, because of chemical destruction of the tissue, it is necessary to rule out any malignancy before treatment. In some instances, multiple visits and treatments are needed which may turn out to be time consuming and potentially expensive. This technique can be an additional alternative treatment for periungual pyogenic granulomas, particularly for small lesions.

COMMENTARY B. RICHERT

This paper reminds us that conservative treatments may be used in some early stages of ingrowing toenails. We have already learned that the taping and gutter splint techniques from Harai [1] and phenol application should be added to the list. However, 14 weekly visits to the dermatologist for such a benign ailment are not acceptable. If a conservative treatment fails after 2 to 3 visits, therapy should be directed toward the cause of the pyogenic granuloma: removal of the spur, lateral avulsion and chemical cautery of the exposed matrix…
However, the authors do not propose what would be the most interesting indication for their technique: cautery of pyogenic granulomas associated with the new EGFR-inhibitors. This side effect is very frequent, it can start 4 weeks after the initiation of the treatment and persist all through the duration of the chemotherapy [2] (Fig1). Chemical cautery is an elegant, painless, bloodless and cheap procedure for those patients that chronically suffer from recurrent periungual pyogenic granulomas.

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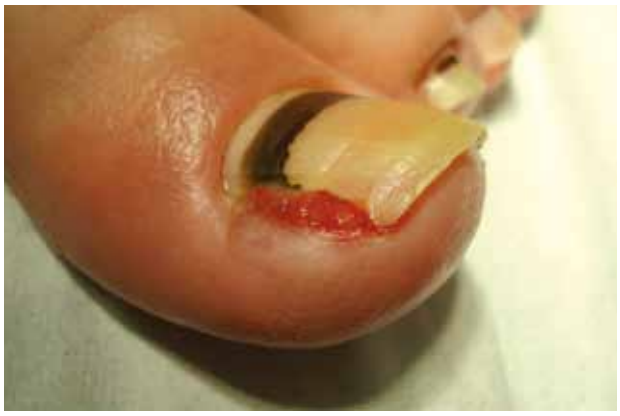

Fig1 - Pyogenic granuloma in a patient under tyrosine kinase inhibitor (trastuzumab). The dark spot results from unsuccessful application of silver nitrate.

Bertrand RICHERT

Algorithm for the management of antibiotic prophylaxis in onychocryptosis surgery

Cordoba-Fernandez A, Ruiz-Guarrido G, Canca-Cabrera A. *The Foot* 2010; 20:140-145.

The nail folds, because of their morphology, provide an excellent habitat for bacteria. It was demonstrated that this area of skin was where the highest number of micro organisms are located. The most common isolated pathogen from the periungual flora is *Staphylococcus epidermidis*. Several studies demonstrated that in spite of preoperative scrubbing and disinfection, the fingernails remain heavily contaminated. From these studies, some authors claim that, even in the absence of infection, the use of antibiotic prophylaxis is justified.

However, the use of antibiotics in association with nail surgery is not clearly established. Scientific evidence for or against their use in the surgical treatment of ingrowing toenails is poor. Some authors affirm that oral antibiotics prior to surgical procedures for onychocrytosis, reduce the risk of developing an infection.

On the other hand, the role of antibiotic prophylaxis in dermatologic surgery also remains controversial. Some authors support the idea that if partial avulsion is performed in the earlier stages of onychocryptosis, the localized infection can resolve spontaneously without the need for antibiotics. The scarcity of data and the lack of clinical trials do not allow any consensus. The aim of the authors was to establish a clinical algorithm based on the existing evidence and on accepted guidelines from the main scientific societies specialized in the topic.

There is some evidence of a 50% reduction in post-op infection when peri-operative antibiotic prophylaxis is used together with clean surgery. However the disadvantages of antibiotic prophylaxis are increased costs, adverse drug reaction, antibiotic resistance and drug interactions. Existing evidence has demonstrated that post-operative infection rates are higher with phenol cauterization than with wedge excision. However, phenol can be used with a concomitant infection thanks to its antiseptic effect. There is little evidence of the effectiveness of prophylactic antibiotics when performing phenolization.
A large group of 154 patients were randomly distributed in 3 groups. The first group received 500mg of cephalexin every 6 hours for one week after surgery; the second group, 500mg of cephalexin every 6 hours the week before surgery; the third group underwent surgery without any antibiotic. There was no significant difference in the 3 groups in the rate of post-op infection and healing time.

With all the evidence-based data, the authors consider that antibiotic prophylaxis is not indicated in the early stages of the disease (stage I and 2) (see table 1).
In stage 3 (Fig1), patients at risk (immunocompromised individuals, patients with a previous prosthetic joint infection, insulin-dependent diabetics) should receive a single dose of antibiotic prophylaxis. Patients with infected ingrowing nails (stage 4 and 5) (Fig2) should have their surgery postponed and be prescribed antibiotics for one week.

Table 1

Stage 1	Irritation of the nail fold without infection
Stage 2	Infection of the nail border with pus and/or granulation tissue
Stage 3	Identical to stage 2, but with history of previous episode
Stage 4	Infection with partial onycholysis
Stage 5	Infection and onycholysis of both sides

Finally, consideration should be given to the need for antibiotic prophylaxis for bacterial endocarditis and hematogenous septic arthritis in high-risk cardiac patients (prosthetic cardiac valve, endocarditis, congenital heart disease, heart transplantation etc.). The decision to treat should be dealt with on an individual case-by-case basis with the patient's cardiologist.

Current evidence does not support the use of pre-operative antibiotic prophylaxis in onychocrytosis except in patients

Bertrand RICHERT

Algorithm for the management of antibiotic prophylaxis in onychocrytosis surgery

with special conditions or at an infective stage.

COMMENTARY B. RICHERT

Although the recommendations made in this paper are not based on large-scale prospective clinical trials, the authoritative guidelines together with the existing evidence allowed the authors to establish an algorithm (see table 2) for making clinical decisions enabling proper management of antibiotics in onychocryptosis.

What they mention is roughly what most nail experts are doing in an intuitive way.

Table 2

Patient's characteristic	Agent	Adult dose
No penicillin allergy	CEPHALEXIN	2g orally
	LEVOFLOXACIN	500 mg orally
Penicillin allergy	LEVOFLOXACIN	500 mg orally
Patient unable to take oral medication	CEFAZOLIN / CEFTRIAZON	1 – 2 g IM/IV
Patient unable to take oral medication with penicillin allergy	CLINDAMYCIN	600 mg IM/IV
Infective onychocryptosis stage IV or V without osteitis	Preoperative dose PLUS empiric antibiotic treatment	

All experts having performed a very large series with chemical cauterization for ingrowing toenails, acknowledge that the rate of infection remains extremely low. Infection has been attributed to poor home care from patients [1] either frightened to look at or touch their wound. As a routine, we have observed that obsessional patients taking over-care of their wound never have any infection… but rather irritative dermatitis!

In general nail surgery, ingrowing toenails excluded, the rate of infection seems even lower. Working in full sterile conditions is a rule [2,3]. For more invasive surgery (exostosis, working on the joint capsule, flap etc.) surgical facilities should meet orthopedic surgery standards [4].

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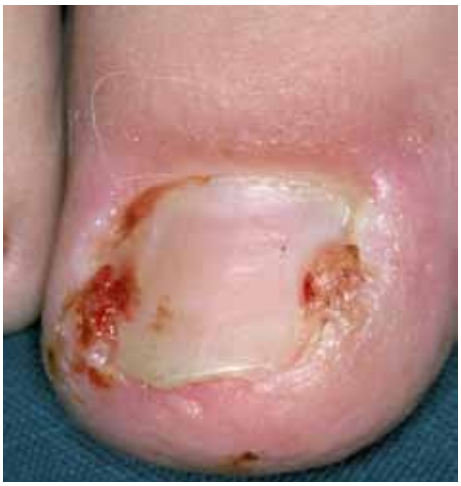

Fig1 - Stage 3 ingrowing toenail.

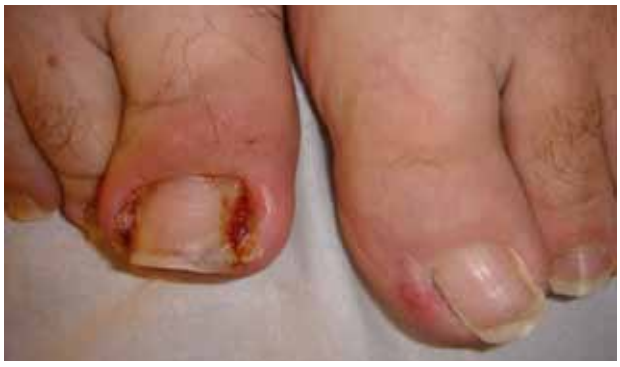

Fig2 - Stage 5 ingrowing toenail on the right great toenail. The left toenail was already operated by chemical cautery the year before.

Subungal traumatic neuroma

Rashid RM, Rashid RM, Thomas V.. J *Am Acad Dermatol* 2010; 63(1):e7-8.

The authors report a 46-year-old African American woman with a subungal growth formed during several months with no history of a previous trauma. The well-circumscribed nodule was firm, skin coloured and elevating the normal nail plate. Tenderness and throbbing pain with changes of temperature were associated. The pain interfered with her manicure and the patient was unable to trim her nail. The biopsy performed was consistent with a traumatic neuroma (nerve fibres in a tangle of fascicles within fibrotic tissue and without a capsular structure).

Traumatic neuromas are rare tumours that develop in locations of traumatized peripheral sensory nerves. The classical presentation is that of a painful nodule on the margins of the palm. To date, no subungal traumatic neuroma has been reported in any English literature. Atypical post-traumatic locations are described: oral mucosa after surgery, tooth extraction, circumcision.The ultimate etiopathology is theorized to be nerve amputation with disorganized attempts at regeneration. No subungal location has been published until now, probably because the nail plate acts as a protection. Differential diagnosis includes neuroma, palissaded encapsulated neuroma, leiomyoma, and schwannoma.

Treatment is complex and should involve orthopaedic hand surgeons. Current approaches include extensive neurectomy, flap repairs, and steroid injections.

COMMENTARY B. RICHERT

This case is not properly balanced, which is probably why it appears as a "letter to the editor". There is only one case of neuroma on the proximal nail fold reported in the literature [1]. Indeed no subungual location has been reported up to now. Among the most important differential diagnosis the authors do not suggest here, is superficial acral fibromyxoma, which is indeed very frequent in the nail apparatus (Fig 1) and was previously very often mistaken for neurofibroma [2]. However, thanks to immuno-histochemistry, the diagnosis may be now rectified. Neoplastic cells show positive staining for CD34 (Fig 2) and negative staining for epithelial membrane antigen, actin, desmin, keratins, S100 protein, CD99, and HMB45 [3]. This exploration is completely missing in this case report and histological diagnosis is very unlikely.

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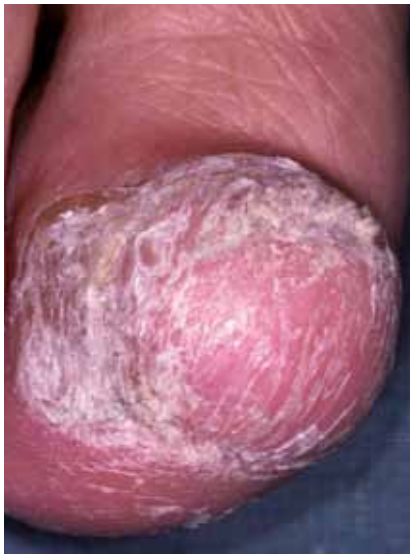

Fig1 - Superficial acral fibromyxoma.

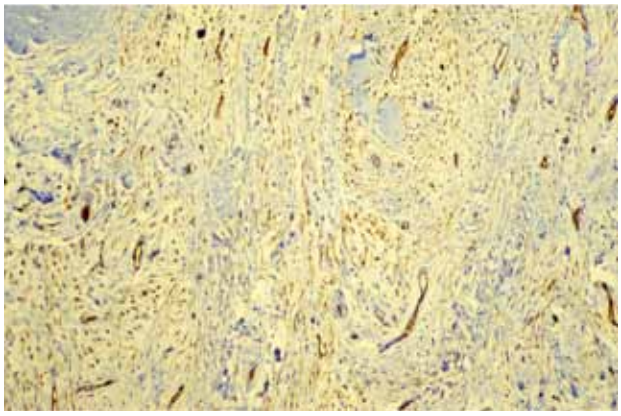

Fig2 - Positive CD 34 staining (Coll J. André, Brussels, Belgium

Bertrand RICHERT

Soft tissue nail-fold excision: a definitive treatment for ingrown toenails

Chapeskie H, Kovac J. J *Can Chir*, 2010; 53:282-286.

The belief that the nail is the causative agent is so ingrained in modern medicine, that a recent review by the Cochrane Collaboration limited its scope to types of interventions that removed all or part of the nail. Multiple surgical approaches to the correction of ingrown toenails have been suggested.

Unfortunately, the current standard of care (partial nail avulsion and matrix ablation) is still associated with poor results. In 1959, Vandenbos and Bowers proposed a theory whereby the excess skin surrounding the nail was burdened with daily weight-bearing, resulting in the bulging of nail-fold soft-tissues and subsequent pressure necrosis.

More recent work has confirmed that the width of the nail fold and rotation of the toe medially contributed to this tissue breakdown, with the resultant ulceration and inflammation forming granulation tissue that eventually embeds the advancing nail plate into the lateral nail folds.

The authors slightly modified the original Vandenbos procedure. It involved the excision of excessive nail-fold granulation tissue with preservation of the nail and its matrix. The excision was generous and adequate, often leaving a skin and soft-tissue defect measuring 1.5 to 3 cm and occasionally exposing a portion of the distal phalanx. Application of silver nitrate or electrocautery was used to reduce postoperative bleeding. Care was taken at all times not to damage the nail matrix. The wound was then allowed to close via secondary intention.

The patients were instructed to soak their feet after 48 hours, 3 times a day for 15-20 minutes in a warm water bath for 4-6 weeks, during which time the dressings were removed and replaced with new clean dressings. Pain control was achieved with acetaminophen-codeine or ibuprofen or both. No antibiotics were prescribed. Patients were followed in the family medical clinic once a week for 4–6 weeks to monitor healing.

The patients were advised that, once healed, they could trim their nails in any way they liked and that they could wear any footwear. A total of 124 patients (164 toes) were treated with the technique for a total of 212 surgical sites. The follow-up times per surgical site were a mean of 4.8 years and a median of 8 years. In total, 73 % of patients were under the age of 29. Before surgical intervention, 78.8% of patients scored their pain as severe, 69.9% had difficulty wearing normal footwear and 64.3% had difficulty with normal activities because of their ingrown toenails. The 212 surgical sites were analyzed, with a median follow-up of 8 years. No recurrences were identified in any patients (100% cure rate). Only 1.6% (n = 2) reported a loss of sensation at the surgical site.

Recently, Noël described a similar procedure with placement of simple interrupted sutures at the wound edges to re-approximate the remaining tissue. In that study, a 12-month follow-up of 23 patients identified no recurrences, excellent cosmetic results and no postoperative complication.

Given that the results presented in this study are a significant improvement compared to the current literature, the authors proposed that a randomized control trial with clearly defined outcomes comparing soft-tissue nail-fold excision with nail avulsion and phenol matricectomy would clearly be of benefit.

In summary, the authors present a surgical approach to the treatment of ingrown toenails that focuses on the excision of nail-fold granulation tissue with preservation of the nail and nail matrix. Their study shows excellent cosmetic results, no recurrences and high rates of patient satisfaction.

COMMENTARY B. RICHERT

The procedure exposed in this paper is of course not the "cure-all" technique! Indeed, phenolization remains the gold standard for most cases of ingrowing toenails. However, when facing long standing chronic ingrowing toenails, the lateral nail folds may have expanded so much that narrowing the nail with chemical cautery could leave postoperatively, a very narrow nail on a bulky extremity. Here, the surgical procedure should be directed towards the excess of soft tissue that covers the plate (the term onychocryptosis is here very adequate). For this reason a large debulking of these thick and fibrous nail folds is a good option. Similar techniques have been proposed over time:

1. In the Dubois technique, an elliptical wedge of soft tissue is excised within the distal lateral wall, down to the bone and suturing the defect immediately pulls the lateral fold down away from the lateral edge of the plate [1] (Figs 1a,b,c).
2. In Noël's procedure, a lateral incision is performed deep enough to remove a large volume of soft tissues, with preservation of some skin of the lateral aspect of the nail to ensure direct closure [2].
3. In the "super-U" technique (Figs 2a,b), described in the PhD of Ivo Peres Rosa (Brazil), the debulking is a variant of the Vandenbos procedure, with removal of the soft tissue all around the toe, in a U-shaped manner. The defect is left for closure with secondary intention healing.

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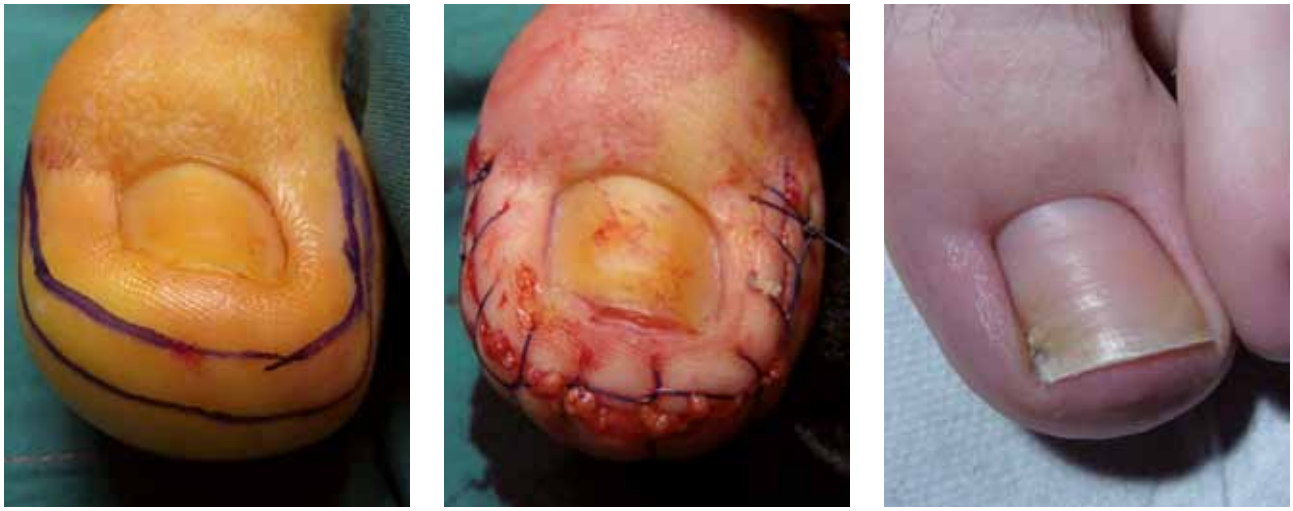
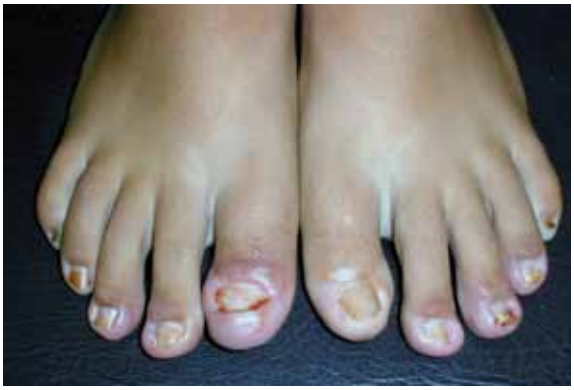


a b c

Fig1a,b,c - Dubois' procedure: before, post op and after 8 months.



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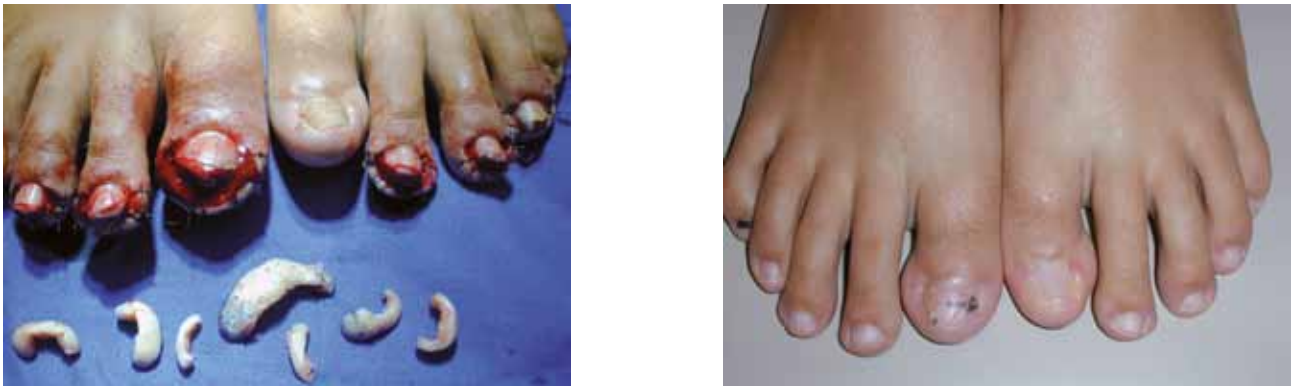

b c

Fig2a,b,c - Super-U procedure: before post op and after (Coll I. Peres Rosa)

The nail - What's new ? n° 4

Clinical cases

Robert BARAN

Robert BARAN's clinical case

A 66-year-old man presented with a double longitudinal banding of the index finger nail. He did not remember when these lesions had first appeared.
A thorough examination showed that each band was made up of a 2 mm reddish line. One of them was located in the middle of the finger nail from the whole lunula to the distal margin.
At the limit of the proximal half, the first red bands became blackish with multiple splinter haemorrhages finishing close to the distal edge. The second red band was 1 mm from the first one. Its redness was slightly shorter and distally, the splinter haemorrhages were close to the end of the medial line, where a short split was visible (Fig 1). After cutting the free edge of both lines a double twin-like onychopapilloma was observed (Fig 2).
The pathology showed acanthosis and papillomatosis which explains the name that we suggested: onychopapilloma.

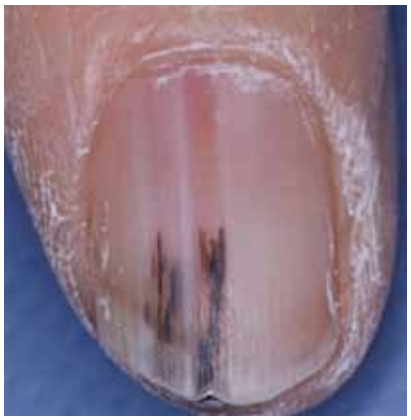

Fig1- Double longitudinal banding of the index nail. Dorsum view showing redness in the proximal half of the bands and blackish with multiple splinter haemorrhages finishing close to the distal edge.

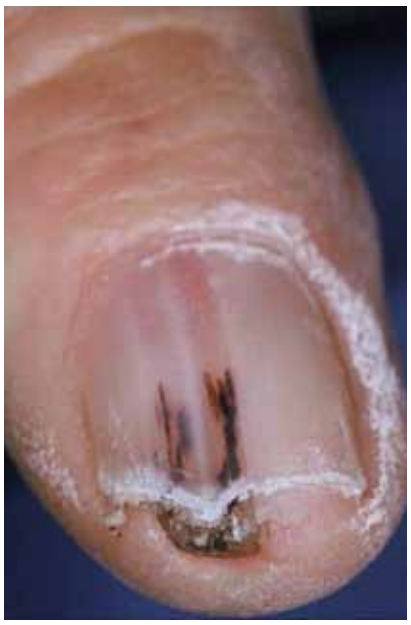

Fig2- After cutting the free edge a double twin-like onychopapilloma was observed.

COMMENTARY

Longitudinal erythronychia (LE) is a term used for red streaks in the nail. It may manifest by localized (single or double) LE. There are different types of LE.
The single or double banding made up of either a red line reaching the onychopapilloma distally or an appearance of alternate redness and blackness. One of our patients with a single band showed an alternation of almost four equal lengths ending in nail splitting. The LE may even be made up of interrupted black double lines.
These facts would have been just a curiosity, were it not for some detected cases associated with malignancy.
Four cases of Bowen's disease, one BCC and three melanomas have been reported in the monodactylous type only. The polydactylous type is sometimes painful, but a painful monodactylous has never been seen until now...

In conclusion, onychology is really a fascinating field if time is taken to examine the patient thoroughly.

Osvaldo CORREIA's clinical case

A 24-year-old woman presented to our consultation on October 2007 with a yellow pigmentation on the palms, soles and on the nails (Fig 1) of both hands with a three month evolution. The yellow discoloration of the nails was diffuse but more pronounced distally. She didn't like the look of it and she decided to paint them. There was no conjunctivae or oral mucosa involvement. Six months earlier she had changed her diet and she ate more carrots, cucumbers, lettuce, oranges, tomatoes, eggs and milk. There was no personal or familiar past history of diabetes, kidney or liver disease neither anorexia nervosa nor tobacco habits. Routine blood analysis including bilirubin and thyroid function were normal. Serum carotene levels were elevated (600 mg/dL). We advised her to discontinue the high intake of food rich in carotene and six months later, when she was reviewed, the color of her palms, soles and nails were normal (Fig 2).

Fig1- Yellow discoloration of the nails related with excess of food rich in carotene.

COMMENTARY

Carotenoderma is a common finding in children or in vegetarians, mainly due to the excessive intake of carrots, but it can also be associated with the ingestion of many other yellow and green vegetables and citrus fruits. Carotenemia is particularly evident in the thickened stratum corneum, like the palms and the soles and in areas where sweating is marked like nasolabial folds. However, nail involvement is rarely reported. Awareness of carotenemia may avoid confusion with jaundice and unnecessary diagnostic studies or treatments. There are many foods rich in carotene mainly carrots, cucumbers, lettuce, spinach, squash, sweet potatoes, apples, oranges, papaya, prunes, peaches, tomatoes, butter, egg yolks and milk, and people under a weight-loss diet should be aware of this clinical finding.

Fig2- Normal coloration of the nails six months after discontinuation of the high intake of food rich in carotene.

David DE BERKER

David DE BERKER's clinical case

A 64 year old woman was referred by her primary care physician with "black discoloration of the left big toenail". The problem had been present for 18 months and had become sufficiently painful in the last 3 months to affect her walking. Her other medical problems included arthritis in the hip of the same leg, hypertension and raised cholesterol. Medication included ibuprofen, amlodipine and simvastatin. She was generally mobile and able to do her own chores, but was not working.

Examination revealed a focus of dark discoloration beneath the big toenail in the midline (Fig 1). It was located in the distal margin of the nail bed and on dermoscopy had a mix of purple and black hues. There was minimal hyperkeratosis beneath the nail in the same zone. The matrix was normal and the other toes and contralateral big toe were also normal. When the patient was asked to walk barefoot across the consulting room and stand relaxed at the end, it was apparent that there was extension at the interphalangeal joint of the affected big toe. The contralateral big toe was less affected.

Preliminary exploration without anaesthetic was to clip back the free edge of the nail and reveal a small focal nodule of loosely adherent dried blood and keratin (Fig 2). Further clipping made it possible to remove this, exposing a smooth nail bed with indentation (Fig 3). The patient was able to walk with no discomfort after this procedure. Over subsequent months the problem recurred, but self management with clipping back resolved the problem.

DISCUSSION

The pathology is due to trauma between the upper midline aspect of the big toe and the inner aspect of the shoe. Sometimes there is a larger hyperkeratotic element or thickening of the skin. Biologically it is the same as a corn, clavus or heloma - all used as terms to describe painful reactive thickening of the skin on the foot. The overlying nail provokes the additional component of haemorrhage which gives rise to the discoloration and in some instances, concern that there may be a melanocytic origin. The podiatric literature classifies heloma into durum, miliare and molle. The latter two describe lesions that are like hard seeds in the sole of the foot or soft tender masses between the toes respectively. The subungual heloma is a variant of heloma durum.

The cause of the trauma is usually a hyperextension at the distal interphalangeal joint of the big toe with consequent impact on the uppers of the shoe. It is usually more marked on one side and it is hence a focal and isolated pathology. The pain and discoloration give rise to concern and referral as possible malignancy. Podiatric management can be as above with self care, or in some instances the hyperextension of the toe is amenable to correction with silicone wedges. For a small number of patients it may be necessary to take the matter further. A prominent dorsal distal tuft to the terminal phalanx can exacerbate the problem and warrant surgery to flatten it and so diminish the pinching effect of the nail bed between the bone and nail plate. There

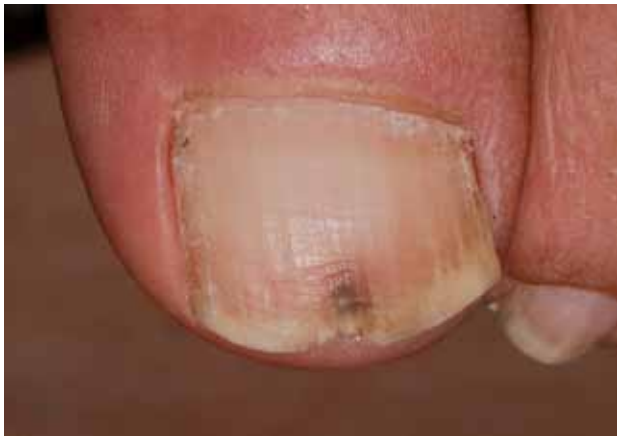

Fig1 - Painful toe with distal discoloration beneath the nail plate.

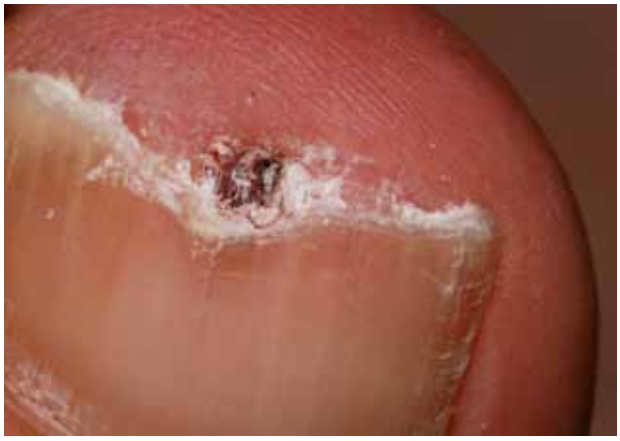

Fig2 - Clipping back reveals a nodule of dried blood and keratin.

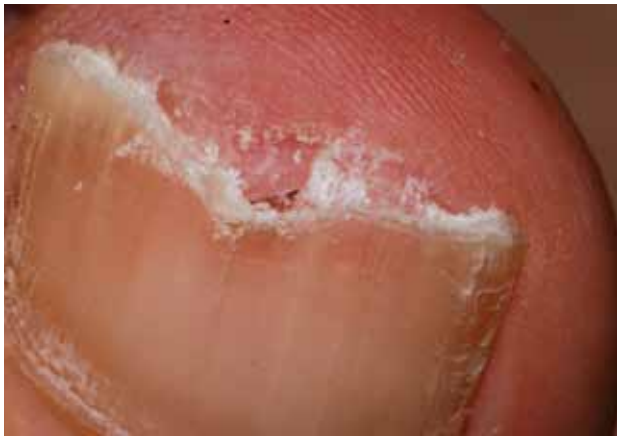

Fig3 - Removing the nodule leaves smooth nail bed and a comfortable toe.

can also be times where the clinical appearance warrants a biopsy of the nail bed to ensure that the diagnosis is limited to a heloma and not dysplasia, wart or other non-traumatic pathologies. If surgery is undertaken and heloma confirmed, there is a significant likelihood of relapse if the predisposing factors are not addressed.

One factor in relapse can be footwear. In summer months with open footwear, one component of the trauma is removed making walking more comfortable and allowing the problem to settle. The opposite happens in the winter, when footwear may need to be modified to diminish impact between toe and uppers of the shoe.

There is very little mention of this entity in the dermatological literature [1] and most comments in the podiatric literature are in books [2,3].

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Bruno FOUILLOUX

Bruno FOUILLOUX's clinical case

A 77-year-old man who had surgical removal of an epidermoid carcinoma of the larynx 6 months before, was referred for skin lesion occurrence. At clinical examination, we noted cutaneous lesions of the extremities with erythematous and hyperkeratotic areas on the ears (Fig 1), dorsal and palmar faces of the fingers (Fig 2), on the pads and on the fingernails and the toenails (Fig 3).

COMMENTARY B. FOUILLOUX

The lesions of acrokeratosis paraneoplastica are erythematous,violaceous keratotic and have ill-defined borders. They are symmetrically distributed, affecting hands, feet, ears and sometimes the nose.

The nails are invariably involved and are typically the earliest manifestation of the disease [1]. There are several degrees of severity:

- in mild forms, the affected nails are thin, soft and may become fragile and crumble
- in more serious forms, the nails are flaky, irregular, whitened and the free edge is raised by subungual hyperkeratosis
- in severe forms the lesions are similar to advanced psoriatic nail dystrophy and may progress to complete loss of the nail (Fig 4-5).

The periungual skin shows an erythemato-squamous eruption, predominantly on the dorsum of the terminal phalanges and may be associated with chronic paronychia [2].

The clinical manifestations of acrokeratosis paraneoplastica may precede the signs of the associated malignancy (several months), disappear when the tumour is removed and reappear with its recurrence. However, the nail involvement does not always benefit from total recovery contrary to the others lesions [3].
The histopathological changes are non-specific.
Acrokeratosis paraneoplastica occurs in association with malignant epitheliomas of the upper respiratory or digestive tracts. It has been reported in malignancy of the pharyngolaryngeal area-pyriform fossa, tonsillar area, epiglottis, hard and soft palate, vocal cords, tongue, lower lip, oesophagus and the upper third of the lungs and pancreas [4].

Differential diagnosis is constituted by psoriasis , Reiter's disease, onychomycosis, acrodermatitis continua ,secondary syphilis and keratoderma palmaris and plantaris.

The first treatment is that of the neoplasia, but topical steroids, systemic steroids and retinoids have been proposed as symptomatic treatment.

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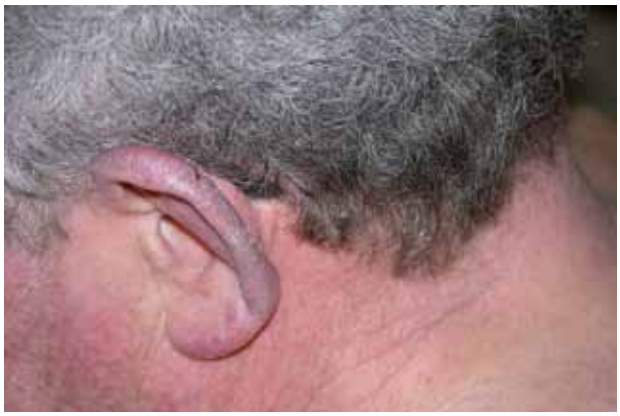

Fig1 - Ear lesions.

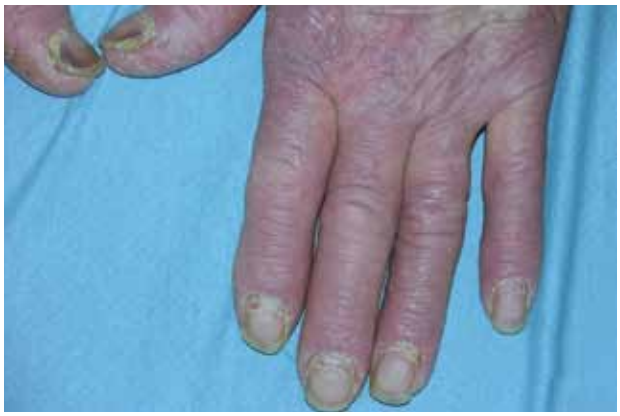

Fig2 - Nail and fingernail lesions.

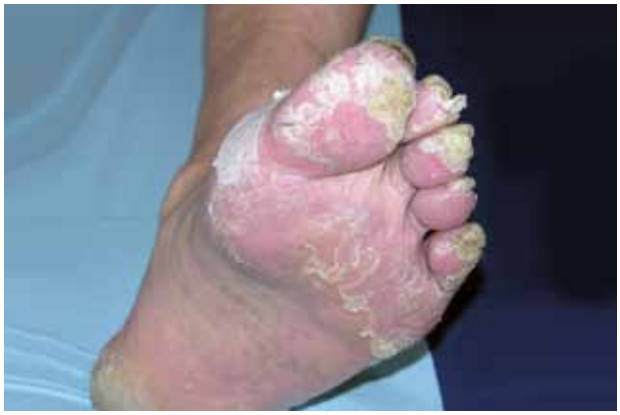

Fig3 - Plantar and toenail lesions.

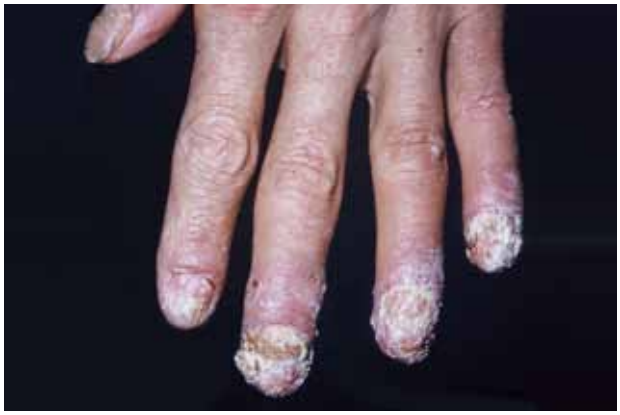

Fig4 - Psoriatic like lesions of severe forms (Coll R. Baran).

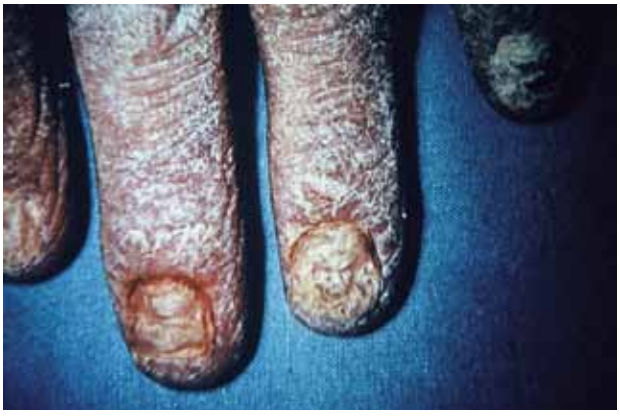

Fig5 - Psoriatic like lesions of severe forms (Coll R Baran).

Eckart HANEKE

Eckart HANEKE's clinical case

In 2010, a 50-year-old male patient was referred to the Department of Dermatology, University of Berne, from the Department of Internal Medicine for the evaluation of "eczema of the hands".

Diabetes mellitus type II had existed since 2003. Pulmonary sarcoidosis stage II with enlarged mediastinal and retroperitoneal lymph nodes as well as persistent calciuria had been diagnosed in 2005. He had mild arterial hypertension, an axonal motori-sensorial neuropathy and Dupuytren's contracture of the left hand.
At first consultation, the tips of the right index finger and left thumb exhibited small defects with circumscribed losses of the keratin layer, hang nails, thickening of the free margin of the proximal nail fold and loss of the cuticles (Fig 1). The nails were irregularly dystrophic. As the patient's original profession was as a baker - even though he had not worked in his profession since 2005 - a series of patch tests (DKG standard, preservatives, topicals, cosmetics, own cosmetic products), an SLS irritation test as well as total serum immunoglobulin and prick tests with house dust mites, dog and cat epithelia, various grass, herbal and tree pollens, moulds, and nutritive allergens were performed, all without a positive result.

Over a period of 12 months, the skin lesions gradually worsened and a re-evaluation of the nail and periungual lesions was requested. He reported that his fingertip lesions had started around the time when the sarcoidosis was diagnosed. For a few years he had also noted a light brown streak in his left index fingernail. Both thumbs, the right index and middle fingers as well as the left index, middle and ring fingers were involved, along with severe nail dystrophy of the left index finger and right thumb (Figs 2-4). The skin lesions were confined to the periungual skin and consisted of superficial skin defects, some crusts and fissures. There were some hang-nail like keratin tags on both thumbs. A 3 mm wide light-brown streak was seen in the left index fingernail, stretching from the middle of the matrix into the free margin of the nail and increasing in colour intensity from proximal to distal. At his last consultation, there was only a small change (Fig 5).
On repeated questioning the patient finally admitted chronic repeated manipulation. He reported the skin would become dry and hard and he felt forced to tear the keratin flakes off the skin which would reduce the strange sensation. Emollients were prescribed to be applied up to ten times a day plus a mild topical steroid at night. However, the lesions did not heal as he continued to manipulate them (Fig 3). The aetiology of the skin lesions was discussed and explained to the patient in detail, but to no avail. A psychological consultation was rejected.

COMMENTARY

Chronic picking of the nails with severe nail dystrophy and finally loss of one or more finger nails is called onychotillomania. Variants are onychotemnomania where the patients obsessively cut their nails until nothing is left, and onychophagia where the patients chew their nails; whereas onychodaknomania is a variant of the latter where the person bites his nails. However, onychophagia is a common phenomenon and not necessarily a sign of psychological disorder. Onychotillomania and onychotemnomania are more serious. Psychological help and a mild antiobsessive-anticompulsive drug may be helpful provided the patient is willing to accept the problem. Even though our patient admitted his auto-aggressive behaviour he could not change it and did not accept psychological treatment.
Longitudinal melanonychia in chronic nail manipulation is not rare and represents melanocyte activation in the nail matrix. It is a consequence of long-term repeated minor trauma, either by friction (frictional melanonychia), onychophagia or other traumiterative processes [1-5]. Even though the index finger in an over-50-year old person is a localisation of risk for subungual melanoma, this is most probably not the case in our patient.

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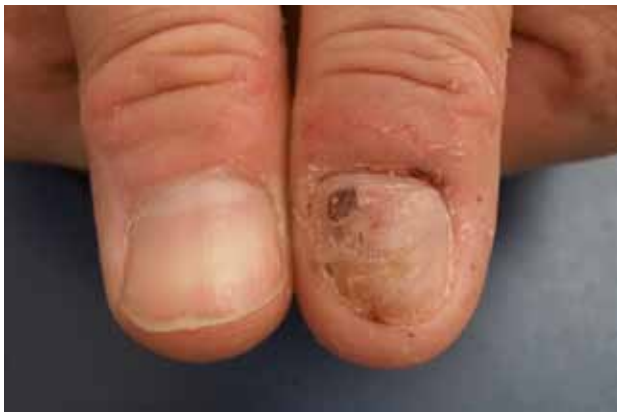

Fig1 - Both thumbs at initial presentation.

Fig2 - Right fingers 2 to 5 after 6 months.

Fig3 - Thumbs 6 months later.

Fig4 - Left fingers.

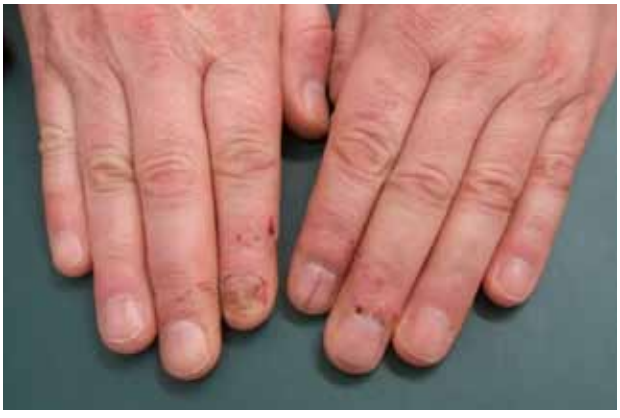

Fig5 - Worsening of the skin and nails at present.

Jose Maria MASCARO

Jose Maria MASCARO's clinical case

A 43-year-old white lawyer, came to my office for his regular periodic skin check-up following two basal cell carcinomas (on the right cheek and right side of the forehead), he had had in the past and which had been treated surgically. Clinically the scars of the removed BCC were soft with no signs of recurrence. After examination of the entire body, no other malignant or pre-malignant cutaneous lesions were observed. However, almost all his toenails presented a diffused dark discoloration (Figs 1 - 2). What could be the cause of this black appearance of the toenails?

Multiple causes can produce linear or diffused, partial or total dark nail discoloration. Racial predisposition, drugs (minocycline, bleomycin, adryamicyn, 5 FU, antimalarials, zidovudine, hydroxyurea), some diseases or local alterations (Addison, hemochromatosis, fungal infections, Laugier-Hunziker syndrome, external agents, etc) could also be responsible. It is important to consider the possibility of proliferation of melanocytes (nevus and melanoma) as well as blood and hemosiderin deposit caused directly by local trauma or related to a general underlying condition (i.e. splinter haemorrhages). In the latter situation the colour is usually of a more reddish blue shade than black (at first sight).
Certainly, in the present case, clinical diagnosis is easy even for non-experts. The patient himself spontaneously guessed the origin of his nail alteration. "My favourite hobby is long distance running. I have run many marathons in my life, but in the last one a few weeks ago, in spite of my long experience, I was silly enough to wear a new pair of sport shoes for the race". The unaffected toe nails were those that did not suffer pressure from either the sock or the shoe.

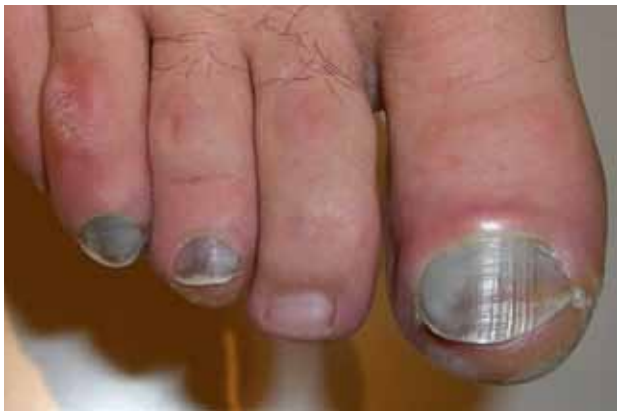

Fig1 - Diffuse dark discolouration of several toenails, right foot.

Fig2 - Diffuse dark discolouration of several toenails, left foot.

COMMENTARY JM MASCARO

Of course this patient does not represent a difficult clinical problem. It is only a short story. The patient himself knew perfectly well why he had this problem as he felt no particular pain throughout the race, only a sensation of localised pressure when running. A long distance runner (as well as in other kinds of sports) would never wear new shoes on the day of the race. Could we call this curious anecdotic multiple toenail darkish discoloration: the naive marathon man's toenail?

Bianca Maria PIRACCINI's clinical case

A 65-year-old man presented with a 2-year history of banded nail pigmentation of the 1st right big toenail. The patient was otherwise healthy, did not take any medication and had no history of previous serious illnesses. Clinical examination revealed a yellow-black longitudinal discoloration of the nail, starting from the lunula up to the distal edge of the nail (Fig 1).

Mycology was performed: KOH showed septate hyphae; culture grew *Trichophyton rubrum* var. *nigricans*. Treatment with systemic terbinafine 250 mg/day for 3 months and periodic mechanical avulsion of the affected nail plate induced mycological and clinical cure in 3 and 10 months, respectively.

COMMENTARY

Onychomycoses are characterised by a typical whitish-yellow discoloration of the nail, but they can sometimes be associated with a black pigmentation, melanic or not. A non-melanic black pigmentation in onychomycosis is due to the presence of dematiaceous fungi, which possess a dark pigment in the fungal cell wall. They include *Alternaria* sp., *Curvularia* sp., and, more commonly, *Scytalidium dimidiatum*. Dematiaceous fungi are poorly responsive to systemic antifungals and periodic nail avulsion is often the best treatment for these onychomycoses.

A black onychomycosis can, however, also be due to the presence of melanin pigment, which can be produced by the host of the fungus. Fungal nail invasion induces an inflammation of the nail epithelia that can cause activation of nail matrix melanocytes. Melanin production can give rise to the development of one or more bands of longitudinal melanonychia associated with the onychomycosis. Longitudinal melanonychia due to melanocyte activation is more common in dark skinned patients (Fig 2). Melanonychia usually fades after cure of onychomycosis, but may persist for a long time (Fig 3).

Some fungi, as *Trichophyton rubrum* var. *nigricans*, are capable of producing melanin pigment, which also gives them a typical antifungal resistance [1].

Recognising a fungus as the source of a band of longitudinal melanonychia is mandatory for correct patient management. Differential diagnosis includes all causes of longitudinal melanonychia, including benign and malignant diseases. Therapy should be chosen considering the high resistance to therapy of melanin-producing fungi. Periodic nail avulsion and topical antifungals is probably the best approach in these cases.

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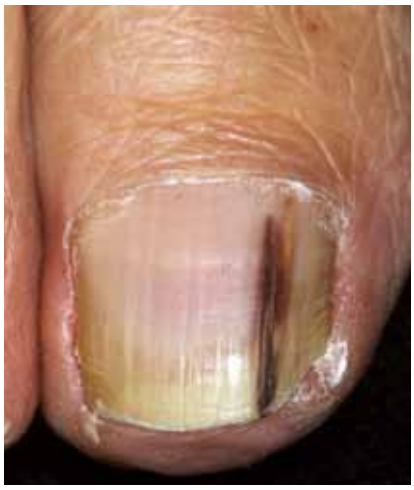

Fig1 - Nail discoloration presenting as a longitudinal band with a yellow-black pigmentation.

Fig2 - Fungal melanonychia in a dark skinned patient with onychomycosis due to *Trichophyton rubrum*.

Fig3 - Same patient as Fig 2: cure of *Trichophyton rubrum* onychomychosis is associated with partial disappearance of nail pigmentation.

Bertrand RICHERT

Bertrand RICHERT's clinical case

This 45-year-old Japanese patient, who recently moved to Belgium, was referred to us for finger and toenail alterations. The anamnesis was quite difficult as the patient spoke neither French nor Flemish and his English was rudimentary. He used his electronic dictionary for every other English word. The nail alterations were located on 5 fingernails and 4 toenails. On the fingernails, they consisted of slightly thickened nails with a yellowish appearance due to onycholysis. The right middle finger also exhibited chloronychia (Fig 1). The left thumbnail showed a discrete onychorrhexis that was also noted to a lesser degree, on the left index fingernail (Fig 2). The affected toenails presented with prominent yellowish discoloration and subungual thickening, evoking onychomycosis. The affected smaller toenails showed some obvious transverse over-curvature. We understood, thanks to an electronic dictionary, that the affected nails had stopped growing. The condition had been evolving progressively over the last 5 years and had started with the toenails. The fingernails had been affected only over the last 2 years. All the inbox leaflets from the multiple treatments already received without improvement were shown to us: topical antifungals, systemic antifungals, antifungal lacquers, systemic antibiotics and urea containing nail lacquer.

Complete physical examination did not reveal any skin, scalp or mucous membrane alteration.

The patient is a manager for a Japanese company and only does paper work and types a lot on his computer. He does not take any regular drugs orally and has no special hobby.

COMMENTARY

This case immediately suggested to us a lichen planus, mimicking yellow nail syndrome. We, of course, ruled out any onychomycosis on the toenail from a nail clipping with direct examination, culture and histomycology. We also performed a lateral longitudinal biopsy that showed histological alterations consistent with lichen planus.

The occurrence of yellow-nail syndrome in nail lichen planus, was reported for the first time by Haneke in 1983 [1]. In another publication, Tosti reports 5 cases of nail lichen planus mimicking a yellow nail syndrome [2]. In her series, all 20 nails were affected in all cases: four out of the five patients had fingernail abnormalities typical of matrix nail lichen planus, with nail plate thinning and splitting. In one patient, there was some slight onychorrhexis on the fingernails. One patient also had oral involvement. All the toenails exhibited a marked yellow discoloration with thickening and transverse over-curvature. Nail growth was arrested in all patients.

Baran reports another case with involvement of the 20 nails that looked dark yellow and with roughness reminiscent of sandpapered nails. Some of the nails showed transverse over-curvature [3].

Our case is interesting as only a few nails were involved and not all 20 nails, as in that of Haneke's, Tosti's and Baran's patients. The most striking feature was the arrest of the nail growth of the affected nails as observed in the already published cases, as well as in the yellow nail syndrome. Our

patient had only a discrete onychorrhexis on two affected nails, whereas it was prominent in Baran's case and only observed in one patient in Tosti's cases.
As mentioned by Baran, yellow nail syndrome-like changes may be a possible sign of nail lichen planus, irrespective of the limbs involved and the number of digits affected.
As a first therapeutic approach, all the onycholytic areas were clipped away and the patient was asked to apply a cream every night, combining calcipotriol and betamethasone. After 3 months, the patient showed no improvement and the nails were still not growing. It was decided to shift to a systemic treatment consisting of monthly injections of triamcinolone acetate 40 mg, as performed in classical nail lichen planus. After 8 months, the fingernails were almost normal, but the toenails had improved only very slightly. This slow evolution on the toenails has been reported in both publications from Tosti and Baran. As our patient tolerated the treatment very well, the injections were then reduced to once every 7 weeks for another 5 months.

Fig1 - Yellowish nails and chloronychia of the 3rd finger.

Fig2 - Discrete onychorrhexis.

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The nail - What's new ? n° 4

Continuing Medical Education

Bianca Maria PIRACCINI

Current therapy of onychomycosis

The search for effective and safe drugs for the treatment of nail invasion by fungi is continuously ongoing and more and more options are developed every year. We have now available valid and safe systemic antifungals, several topical antifungals with various vehicles and other new therapeutical options, including lasers and photodynamic therapy. Moreover, evidence has shown that removal of the affected nail plate can be helpful to increase the cure rate of onychomycosis and several ways and devices to obtain safe removal of the diseased nail have been developed.

Choice of treatment depends on several parameters, related to the patient and to the responsible fungus. The first parameter to be considered is the type of onychomycosis: we can distinguish among distal and lateral subungual, endonyx, proximal subungual, mixed, totally dystrophic, and superficial onychomycosis[1].

Besides the latter, all the other types of onychomycosis usually require a systemic treatment or several months of a topical agent. The second important parameter to be considered is which agent is responsible for the disease: up to 85% of onychomycosis are due to dermatophytes, but about 10-13% are caused by non-dermatophyte molds, which are often resistant to systemic antifungals. When the diagnosis is of non-dermatophyte mold onychomycosis, the choice of treatment should be directed toward topical agents and periodic nail removal. Onychomycosis due to *Candida* is not common, and responds very well to treatment with systemic azoles. However, since the development of *Candida* onychomycosis requires predisposing factors, such as immunodepression, the high risk of recurrences is an important fact to be considered in these patients. Third parameter: patient's characteristics including age, concomitant diseases and medications. Itraconazole and terbinafine may interact with several drugs and are contraindicated in some diseases. Topical application of drugs can be difficult in obese patients or in patients with eye deficit. Last but not least: there are several parameters that suggest that the onychomycosis will be difficult to treat: recognition of them will help to utilize combination therapy to achieve better results. These parameter indicators of a poor prognosis include: involvement of the lateral part of the nail, involvement of the matrix, onychophytoma, massive nail bed hyperkeratosis, presence of a non-dermatophyte mold (*Fusarium* sp., *Scopulariopsis brevicaulis*), pigmented onychomycosis (*T.rubrum* var. *nigricans*).

If we consider all these parameters and are able to use the different therapeutical options, sometimes combining them, we will be able to achieve 100% cure of onychomycosis.

Systemic drugs

Terbinafine and itraconazole have been shown to reach the distal nail soon after therapy is started and to persist in the nail plate for long periods after the end of treatment. The persistence of high post-treatment drug levels in the nail allows short treatment periods with few relapses and side effects.

- *Terbinafine.* Prescribed at the dosage of 250 mg/day for 6 weeks for fingernail and 12 weeks for toenail onychomycosis, terbinafine is the most effective systemic antifungal for onychomycosis. It is not recommended in patients with liver disorders. Interactions with other drugs are extremely rare. Adverse effects may involve the gastrointestinal tract and the skin. Patients with known lupus erythematosus or photosensitivity are predisposed to drug-induced or drug-exacerbated disease. Reversible taste alteration (metallic taste) is not rare and typically occurs 5-8 weeks after starting treatment.
- *Itraconazole.* It is prescribed in pulse therapy (400 mg/day for one week a month): 2 pulses for fingernails and 3 pulses for toenails. It should be administered with a high fat meal and/or acidic beverage to improve absorption. It is not recommended in patients with liver disorders. Due to interactions with many other drugs metabolized by cytochrome P450-linked enzymes, itraconazole should be used cautiously in elderly patients who are taking multiple drugs. Adverse effects are rare and involve the gastrointestinal system.
- *Sequential treatment* with itraconazole and terbinafine has been utilized to increase cure rates: the suggested regimen is 2 pulses of itraconazole 400 mg/day for 1 week a month followed by 1 or 2 pulses of terbinafine 500 mg/day for 1 week a month.

Topical drugs

- *Nail lacquers.* Three antifungals vehicled by nail lacquers are available on the market: amorolfine and ciclopirox in water-insoluble nail lacquer and ciclopirox in water-soluble nail lacquer. Amorolfine nail lacquer is applied once a week on the nail plate, and it is marketed with a nail file that has to be used to file the affected nail plate in order to increase drug penetration. Excessive use of the file may cause nail thinning and nail bed redness. Ciclopirox should be applied once a day. Cure rates are quite high if utilized in distal subungual onychomycosis involving the distal third of the nail. Topical antifungals alone are indicated for the treatment of white superficial onychomycosis and for mild forms of distal subungual onychomycosis. In patients where systemic antifungals are contraindicated, the sole administration of nail lacquer requires 8-10 months of treatment and percentages of cure are increased by periodic removal of the affected nail.

Associated options

Periodic removal of the affected nail plate helps reduce the fungal mass, speeds up the cure process and increases the percentage of cure. However, not all patients accept to have the nail periodically shortened, especially women wearing open shoes in summer. Removal of the affected nail can be

done mechanically, with the use of a nail clipper, surgically, or chemically, utilizing urea-containing topical products. Urea at high concentrations (40% or more) has keratolytic properties and gradually softens the nail that become easy to trim and is better penetrated by antifungals (Fig. 1-2). Urea itself has a fungicidal activity.

New treatments

- Lasers. There are 2 lasers marketed for the treatment of onychomycosis: Noveon diode laser and 0.65-ms pulsed Nd:YAG 1064-nm laser. In preliminary studies, both of them have shown effectiveness in about 33% of the treated patients, with optimal tolerability but high costs.
- Photodynamic therapy is still under development for the treatment of onychomycosis. Although several studies have shown fungicidal activity of photodynamic therapy against dermatophytes *in vitro*, these results are not confirmed by *in vivo* studies. This may be due to the fact that nail structure probably blocks optimal penetration of the light and the photosensitizer in the nail.
- The new systemic antifungals developed for the treatment of systemic mycoses, voriconazole, posaconazole, ravuconazole, etc. were initially thought to be helpful for onychomycosis, but the high incidence of side effects does not make their use worthwhile in onychomycosis.

Available treatments for onychomycosis permit cure of all cases, only if the dermatologist is able to recognize the type of onychomycosis, the responsible agent and cases difficult to treat and if he/she is able to combine different treatments and techniques for nail removal. Mycological cure should always be evaluated at the end of treatment. Patients treated with systemic antifungals should always be followed up for 4 to 12 months after discontinuation of therapy to evaluate its efficacy, since clinical cure occurs when the new nail replaces the diseased one (Fig. 3 and 4). Recurrences and reinfections of onychomycosis are not uncommon (up to 20% of cured patients). For this reason, after the cure it is advisable to continue application of a topical antifungal nail lacquer on the previously affected nails and a topical antifungal cream or solution on soles and toe webs to reduce the chance of recurrences.

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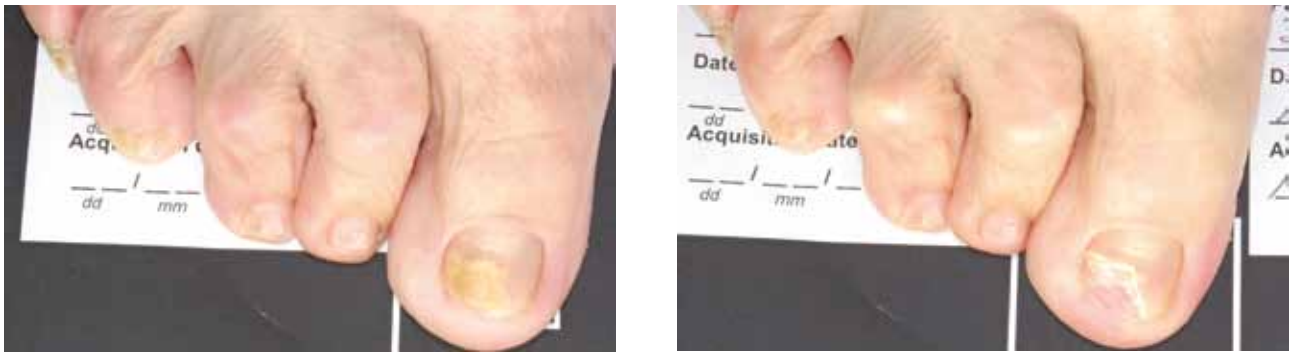

Fig1 & 2 - Distal subungual onychomycosis before (Fig 1) and after 30 days of application of urea ointment under a plaster band (Fig 2): removal of the diseased part of the nail will allow better treatment response.

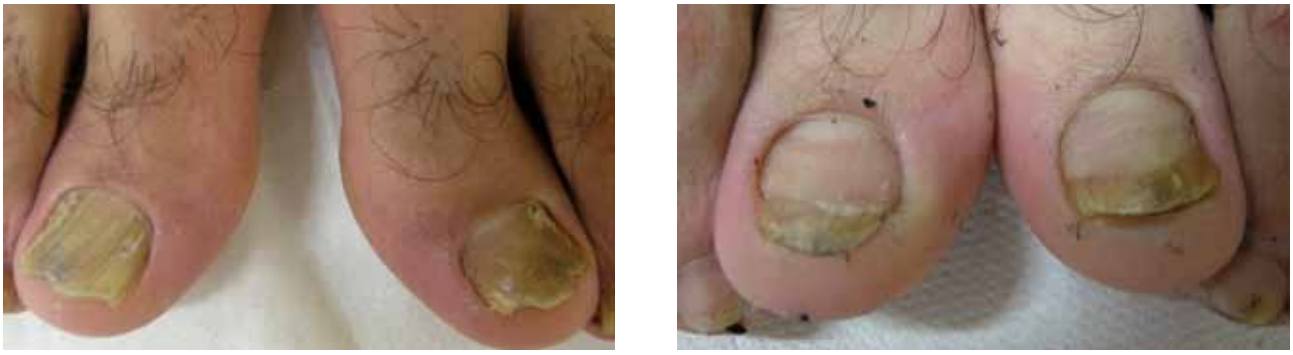

Fig3 & 4 - Distal subungual onychomycosis due to *T. rubrum* before (Fig 3) and after 3 months of treatment with systemic terbinafine (Fig 4). Mycology is negative, but clinical cure will be observed after complete nail regrowth. Follow-up visits will monitor progression of clinical cure.

notes

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