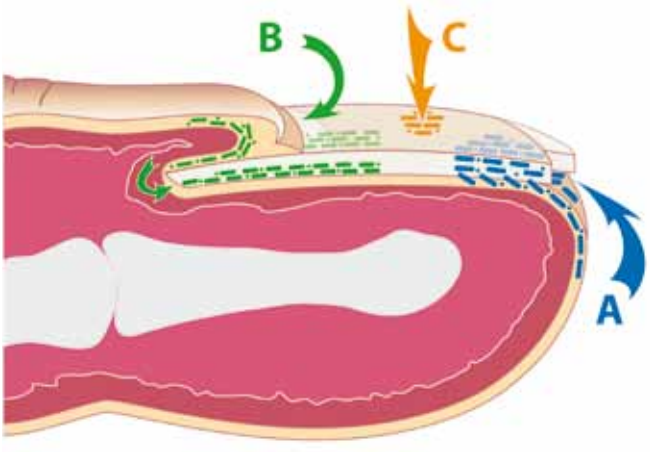
English edition
2010

n°3

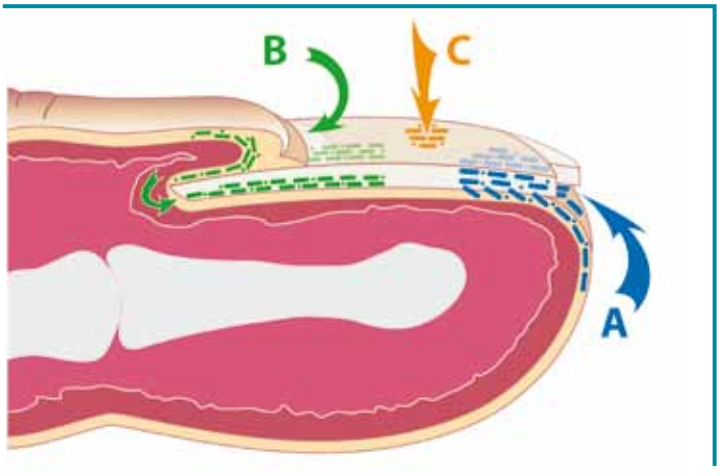
The nail



What's new ?

Pierre Fabre
DERMATOLOGIE

The nail - What's new ? n°3



Fungal invasion pathways

HASTA LA VISTA !

I have decided to take a sabbatical year. My participation in "The Nail - What's New" was disturbed by the new organization. I was obliged to ask my friend Robert Baran not to include me in the 2010 Edition. He accepted, but to make me feel guilty, he insisted that I should at least be present in writing the Editorial. When I asked him what theme he wanted me to deal with, he simply replied "anything - the nail is a vast subject."

I have never been an expert on the nail and its pathology, but I have been and still am, a dermatologist and a pathologist in morphology (that is to say those who, in the past, studied the forms and constitutions rather than "the more or less specific monoclonal markers" in order to diagnose what had been directly or indirectly observed previously by analogy). It is true to say that during my professional career, I have largely contributed to the subject of nail alterations, usually called cutaneous annexes.

Speaking of annexes, I really wonder why some authors also include the teeth. What link is there between the adamantine organ and the primitive hair germ or the nail matrix? I can only offer you an explanation in the popular expression "to fight tooth and nail"

Anyhow, I do not consider myself to be an expert in nails, but only a physician who has been very interested in an organ viewed as unattractive by most doctors.

So what can be said about nail alterations? That they are frequent, sometimes banal, but can be extremely useful in detecting dermatological or systemic diseases. That alterations are deceptive and all dermatologists should know how to recognize and interpret the signs. That most "nail fungi", labeled as such by non specialists, are not infectious and are not related in any way to fungi. That there are real experts in physiology and nail pathology (Robert Baran is an example), and that there are others, like myself, who could be considered as pseudo-experts, when compared to those who are not interested in, or who even feel contempt for, this subject.

The nails, as well as the mucous, should always be examined in patients not only suffering from dermatoses, but also from other diseases. These examinations can simplify overall diagnosis. Yet, in order to be able to do this, it is necessary to have studied and be perfectly trained, so as not to mix everything up and get lost. As Claude Bernard so rightly said "The person who does not know what they are looking for cannot understand what they find".

Finally and without meaning to, I have written enough lines for an Editorial.

However before finishing I am beginning to wonder: why do human beings still have nails which they no longer need ... animals still use their claws ! And it dawned on me while writing - "as long as pruritus exists, the nails allow humans to scratch themselves!" Could this be their last raison d'être?

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The nail - What's new ? n°3

Condensed selected articles with commentary

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The nail - What's new ? n°3

Condensed selected articles with commentary

Robert BARAN

Comparative study of nail sampling techniques in onychomycosis

Shemer A, Davidovici B, Grunwald M, Trau H, Amichal B. J Dermatol 2009; 36: 410-4

In this article, the authors report a study which was carried out according to the principles of the Declaration of Helsinki and was approved by the local Helsinki committee. They assessed a total of 60 patients (50% female and 50% male) aged 16-70 years (mean 38.8 years) with untreated suspected toe onychomycosis (DLSO and LSO) using three different sampling methods outlined below.
Before obtaining samples, nails were cleaned with alcohol and the most distal part of the nail was pared to eliminate contaminant molds and bacteria as far as possible. Debris containing suspected fungal material was collected from the nail bed. The sample was taken using three techniques from the same affected nail. They were examined with curettage and drilling techniques. 35 (58.3%) patients had DLSO, while 25 (41.7 %) had LSO. The duration of the fungal infection ranged from 4 to 25 years with a mean duration of 11.45 years. Diseased area of the nail ranges from 35% to 79% (mean 54.4%). There were no statistically significant sex differences and the percentage of the affected nail or the clinical form of the fungal infection (LSO vs DLSO). There were also no differences between the clinical form of fungal infection (LSO vs DLSO) and the duration of the fungal infection or the patient's age. However, in women the duration of the fungal disease was longer than in men (11.97 vs 10.93 years, P = 0.052).
With each technique culture sensitivity improved, as the location of the sample became more proximal. However, probably due to the relatively small number of subjects, it was not statistically significant. Regardless of the sampled site, the drilling techniques showed a higher sensitivity to culture (horizontal drilling vs curettage distal, $X2 = 4.76$, $P = 0.029$; vertical drilling vs horizontal drilling $X2 = 26.67$, $P < 0.0001$).

Obtaining accurate laboratory test results before treatment is important in clinical practice. Several diagnostic techniques for collecting nail material for fungal laboratory examination have been described. The purpose of this study was to compare the results of curettage and drilling techniques of nail sampling in the diagnosis of onychomycosis, and to establish the best technique and location for sampling. The authors evaluated 60 patients suffering from distal and lateral subungual onychomycosis and lateral subungual onychomychosis using curettage and vertical and horizontal drilling sampling techniques from three different sites of the infected nail.
KOH examination and fungal culture were used for detection and identification of fungal infection.

In this study the drilling technique for nail sampling enabled a more accurate diagnosis of nail fungal infections in the three sites tested (Fig 1). The vertical drilling technique was found to be statistically better than horizontal drilling and curettage at the proximal site. With each technique the authors found that the culture sensitivity improved as the location of the sample became more proximal. Furthermore, in this study they showed that more species of fungi, which cannot be cultured from the distal part, were found at the medial and proximal parts of the nail; these may have been species which cannot survive at the distal edge of the nail. Based on this study, they suggested that the vertical drilling technique should be the prefered method of nail sampling in laboratories.

COMMENTARY R. BARAN

This interesting study is not a surprise. We know that culture sensitivity improves as the location of the sample becomes more proximal.

Fig1 - Different areas of drilling.
Courtesy of A. Shemer (Israel).

Detection of HPV-15 in painful subungual tumors of incontinentia pigmenti: successful topical therapy with retinoic acid

Donati P, Muscardin L, Amantea A et al. Eur J Dermatol 2009; 19; 243-7

Incontinentia pigmenti (IP) is an X-linked dominant disorder, which occurs in female patients.
The diagnosis of the present case was achieved on the basis of the onset in an adult suffering from subungual tumors (STIP) together with other specific symptoms such as ocular and dental abnormalities and achromic lesions of the legs. In the STIP lesions the presence and, in one of them, the expression of HPV type 15, were detected. Topical therapy with retinoic acid cured the tumoral lesions.
This is the first report of HPV in STIP, opening a new scenario in the pathogenesis and the treatment of STIP.
In conclusion, all painful subungual tumours should be considered as a possible late manifestation of IP.

A 31-year-old Caucasian woman noticed the onset of a subungual nodule (Fig 1) on the third finger of her left hand, with painful symptomatology and, subsequently, other nodules appeared under other nails. The family anamnesis revealed that she had four brothers and seven sisters, all free of dermatological diseases. After birth she suffered a cutaneous vesiculobullous eruption, mostly localized on the lower limbs, where hypopigmented linear lesions are now visible. These clinical manifestations were not referred to as IP, and were treated as an aspecific dermatitis, which resolved after a short time. The clinical examination revealed: 1) a partial anodontia of the right mandibular arcade; 2) blindness of the right eye; 3) an hyperkeratotic growth under the nail plate, on the fourth finger of the right hand which was conserved with partial onycholysis. The patient complained of continuous painful symptomatology in these lesions, clinically a squamous neoplasia was suspected for the lesion on the third finger of the left hand and biopsies of the nail bed were performed from both lesions. The histological examination of the nail plate showed an acanthotic epithelium with pseudoepitheliomatous features and the presence of numerous dyskeratotic and necrotic keratinocytes (Fig 2). The granular layer contained clumps of keratohyaline granules with hypergranulosis, and the presence of a few large vacuolated cells (koilocyte-like cells) was detected in the more superficial part of the malpighian layer.
In addition to the histological examination, consecutive paraffin embedded sections were de-waxed by xylene/ethanol treatment and utilized for the DNA/RNA extraction in accordance with standard procedures. PCR-grade DNA was extracted from both lesions whereas PCR-grade RNA was obtained only from the biopsy of the third finger of the left hand, since the RNA in the other biopsy was completely degraded and no amplification with primers for housekeeping genes (beta-actin and beta-globin) was revealed.

DNA was analyzed by PCR for the presence of HPV utilizing the primers of Berkhout et al. Sequence DNA analysis of the amplified products showed the presence of a DNA sequence overlapping that of the HPV 15. Total RNA was also tested by RT-PCR using the One step commercial kit (Invitrogen, Milan, Italy) with specific primers for the E7 gene of HPV 15. The presence of a band corresponding to the product of the HPV 15 E7 amplified was revealed and confirmed by sequence analysis, demonstrating that the virus was transcriptionally active.
The diagnosis of painful subungual tumors in IP was made on the basis of histological examination with the presence of dyskeratotic cells, the discovery of achromic lesions on the lower limbs and the presence of other somatic defects (dental and ocular abnormalities). A topical therapy with 0.05% retinoic acid cream applied twice a day was prescribed. After one month of therapy, the patient indicated a decrease in pain and after six months a definitive clinical resolution was achieved with a lessening of the tumour burden and pain alleviation.

Robert BARAN

detection of HPV-15 in painful subungual tumors of incontinentia pigmenti

AUTHOR'S COMMENT

Only keratoacanthoma shares very similar clinical (i.e. multiplicity and spontaneous regression) and histological (i.e. dyskeratotic and koilocyte-cell) aspects, but the difference in age of onset, gender and other associated symptoms can differentiate the two diseases. To date, 14 cases of STIP have been described in literature and the reported clinical/histological features indicate that a correct diagnosis of STIP was made in this patient. The histological features of these literature cases were homogeneous with pseudoepitheliomatous hyperplasia and dyskeratotic cells and some authors described particular cells with a clear and "glassy" cytoplasm, suggestive of viral infection. Moreover, pregnancy seems to be a favourable factor, as a regression of STIP has been detected during gestation in two published cases, even if spontaneous regressions have been reported in six patients. Indeed the patient reported a moderate regression of STIP symptoms in pregnancy.
Although STIP may resolve spontaneously, surgical or medical approaches have been tried out. Abimelec et al. used topical fluorouracil that was effective in relieving and reducing keratotic mass.
Mascaro et al prescribed etretinate 1 mg/kg for three months with clinical resolution of the tumors.

References
- Berkhout RJ, Tieben LM, Smits HL et al. Nested PCR approach for detection and typing of epidermodysplasia verruciformis-associated human papillomavirus types in cutaneous cancers from renal transplant recipients. J Clin Microbiol 1995; 33: 690-5.
- Mascaro JM, Palou J, Vives P. Painful subungual keratotic tumors in incontinentia pigmenti. J Am Acad Dermatol 1985; 13: 913-8.
- Abimelec P, Rybojad M, Cambiaghi S et al. Late, painful, subungual hyperkeratosis in Incontinentia Pigmenti. Ped Dermatol 1995; 12: 340-2

COMMENTARY R. BARAN

This article adds something new to the therapy of the painful subungual tumors of incontinentia pigmenti. However, it is paradoxical to see that local retinoic acid was effective while etretinate 1mg/kg was the only systemic treatment which led to a clinical resolution of tumours in Mascaro et al's. cases in three months. This simple local treatment should, therefore, be the priority choice for patients with this disease.

Fig1 - Incontinentia pigmenti (Collection Nurse DS, Australia)

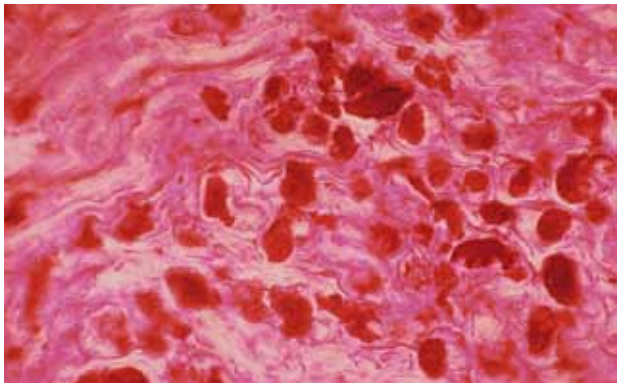

Fig2 - Dyskeratosis is one of the main features of this tumour.

Robert BARAN

Habit-tic deformity secondary to guitar playing

J J Wu. Dermatol Online J 2009 (epub); 15: 16

A 29-year-old healthy Asian male presented with a ten-year history of linear ridges and depressions on the right thumbnail. He denied trauma to the nail or distal finger. The nail changes were asymptomatic. On further questioning, he said that he played guitar recreationally and had started about ten years previously.
On physical examination, multiple 6 mm linear, transverse ridges alternating with depressions were found on the central aspect of the nail plate. There were no changes to the cuticle, nail folds or the distal fingers in general. All the other fingernails and toenails were normal.
The patient was instructed to stop playing the guitar for a few weeks to see if the nail changes would improve. On follow-up three months later, the proximal half of the right thumbnail was normal, and the distal half of the nail showed the same linear transverse ridges and depressions.
The patient stated that he had stopped playing the guitar, but he would probably start again in the future. He did not mind the cosmetic appearance if the nails changed again.

AUTHOR'S COMMENT

Habit-tic deformity and median canaliform nail dystrophy, which resembles a fir tree on the thumbnail, have been thought to be related entities (Fig 1). Habit-tic deformity has been successfully treated with multivitamins and with fluoxetine to address the psychological aspect of the disease process.
The trauma that causes habit-tic deformity is often believed to be of an external nature, such as picking at the cuticle. During guitar-playing by a right-handed individual, the right thumb is used to apply firm pressure to the largest string along the shaft of the guitar.
Holding sustained pressure on this large-gauge metal string may cause strain to the nail matrix on the opposite side of the thumb, creating the typical changes of the habit-tic deformity. Guitar and other string-based instruments should be considered as possible non-traumatic causes of the habit-tic deformity.

COMMENTARY R. BARAN

Usually, deformity produced by guitar playing involves the distal bony phalanx that presents with acroosteolysis and this may even be an occupational condition. It is astonishing to see that radiography of the distal phalanges was not performed in this case.

Reference
Baran R, Tosti A. Occupationnal acroosteolysis in a guitar player. Acta Derm Venereol. 1993; 73: 64-5.

Fig1 - Longitudinal canal mainly involving the upper portion of the nail plate with transverse grooves in a patient pushing back his proximal nail fold.

Robert BARAN

High-frequency sonography in the evaluation of psoriasis

Gutierrez M, Wortsman X, Filippucci E et al. J Ultrasound Med 2009; 28: 1569-74

The purpose of this study was to show the potential of the latest sonographic equipment using high-frequency probes and a very sensitive power Doppler (PD) technique in depicting both skin and nail changes in patients affected by psoriasis.
The study was conducted in 30 patients, clinically diagnosed as having psoriasis by an experienced dermatologist, and 15 healthy participants. The method used was a currently available sonography system equipped with a variable-frequency transducer ranging from 6 to 18 MHz and a Doppler frequency ranging from 7 to 14 MHz.
The images illustrated in this presentation are representative examples of the ability of sonography to show and characterize even minimal morphostructural and blood flow changes in patients with both psoriatic plaques and onychopathy.
This report provides pictorial evidence that high-resolution gray scale sonography with a PD technique is a real-time and non-invasive imaging technique that can be used as an adjunct to the clinical evaluation in assessing psoriatic disease.

AUTHOR'S COMMENTS

The components of the nail unit are clearly visible on sonography. The dorsal and ventral plates appear as 2 hyperechoic parallel lines with a virtual hypoechoic space in between. The nail bed appears as a hypoechoic band not clearly distinguishable from the underlying subcutaneous tissue. The bony margin of the distal phalanx appears as a continuous hyperechoic line below the nail bed. A minimal amount of blood flow may be detectable on PD imaging in some nail beds because of the presence of thin arterial and venous vessels (Fig 1).
In psoriatic onychopathy, changes are located in both the nail plates and nail bed. The nail plates may show hyperechoic parts or loss of definition, which can involve only the ventral plate or both plates. In later stages, a wavy or thickened appearance of both plates may be visible. The thickening of the nail bed can be measured (i.e, the distance between the ventral plate and the bone margin of the distal phalanx). These changes can be associated with an increase of blood flow which can be observed with the PD technique.
The main sonographic features in psoriasis onychopathy are:

- focal hyperechoic deposits in the ventral plate (may be subclinical and correlate with subungual keratosis) without involvement of the dorsal plate
- loss of definition of both nail plates which develop a wavy form
- thickening of the nail bed
- increased blood flow in the nail bed detected on PD sonography

COMMENTARY R. BARAN

Besides sonography, two other radiological techniques are worth considering:
1/ MRI showing cortical inflammation
2/ scintigraphy where bone-seeking isotopes are visible in periarticular distribution
New techniques of nail imaging open a new era in the diagnosing of subclinical features.

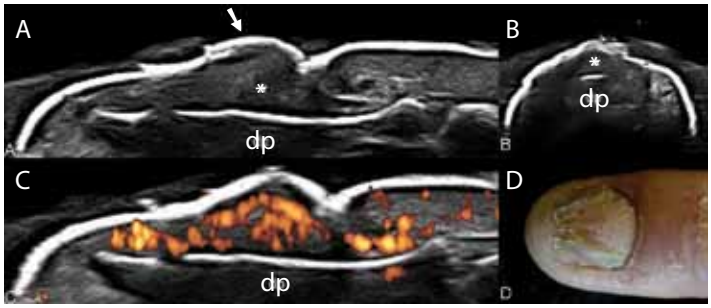

Fig1 - Psoriatic onychopathy
A - Gray scale sonograms obtained in longitudinal and transverse
B - Views show thickening and irregular undulation of the nail plates which became a single and hyperechoic layer (arrow). The nail bed is clearly thickened (stars).
C - (left) Power Doppler sonogram showing marked signals indicating an evident blood-flow increase, (right) psoriatic onychopathy in the same patient.

Unilateral taxane-induced onychopathy in a patient with a brain metastasis

Truchuelo M, Vano-Galvan S. Pérez-B, Muñoz-Zato E, Jaen P. Dermatol Online J 2009; 15: 7.

Taxane containing chemotherapy is used for the treatment of various solid tumours. A high dose, three-weekly regimen of taxanes led to a high rate of side effects. Diverse cutaneous side effects have been described, mostly consisting of nail dystrophies.

A 48-year-old woman had been diagnosed in 1998 with breast cancer and treated surgically with the addition of radiotherapy and adriamycin, ciclofosfamide, methotrexate, fluororacile and tamoxifen. In 2003, liver, bone and lung metastases were detected. Therefore, docetaxel (75 mg/m^2 day every three weeks) plus trastuzumab (4 mg/kg/week) continued with (2 mg/kg/week) were initiated and produced a total radiological response of the liver metastases. In 2005, additional metastases affecting the liver, bone and brain were detected and the patient underwent treatment with radiotherapy, trastuzumab and vinorelbine with poor tolerance. This therapy was replaced by a new regimen with paclitaxel (80mg/m^2) and carboplatin. During the next three months she developed onycholysis and leukonychia affecting 20 nails, due to paclitaxel. The carboplatin was replaced by trastuzumab owing to clinical progression. In June 2006 capecitadine was added due to clinical progression. In December 2006 a progressive L upper body hemiparesis developed, which included the hand. PET-TAC showed that brain metastasis was affecting the right internal capsule. In December 2007, capecitabine was replaced by docetaxel (1mg/m^2 every three weeks) plus lapatinib due to erythrodysesthesia and clinical progression Six months after the introduction of docetaxel, the patient developed onychopathy affecting all nails except those of the left paretic hand (Fig 1). The patient died three months later.

Wasner et al. described a woman with breast cancer and infiltration of the right brachial plexus being treated with docetaxel which caused onychopathy in all the nails, except those of the right hand. They postulated that the integrity of peripheral nerves may be necessary for developing nail alterations.

The authors hypothesize that the presence of external factors may play a role in the mechanism of taxane-induced Onycholysis, specifically asymptomatic trauma. They believe that the absence of trauma in an immobile arm enables avoidance of onycholysis or subungual hematomas. In addition slowing of the nail growth could be explained by the abnormal innervation of the paretic hand.

COMMENTARY R. BARAN

There are few authors who have published the sparing of the fingernails of one hand:

- Wasner G, Hilpert F, Schattshneider J et al. Docetaxel induced nail changes: a neurogenic mechanism. J Neuroncol 2002; 167-74

But just as interesting as Wasner's article, is the paper of:

- Nakamura S, Kajita S, Takaji A et al. Improvement in docetaxel-induced nail changes associated with cycloxygenase-2-inhibitor treatment. Clin Exp Dermatol 2009; 34: e320-e321,

where the selective COX 2 inhibitor Meloxicam should be used to avoid, or at least limit, taxoid-induced nail involvement.

Fig1 - Onychopathy affecting all nails of the right hand and sparing those of the left paretic hand.
(Courtesy of M. Truchuelo Dermatol on line J. 2009; 15: 7)

Robert BARAN

Comparative study of direct polymerase chain reaction, microscopic examination and culture-based morphological methods for detection and identification of dermatophytes in nail and skin samples

Uchida T, Makimura K, Ishihara K et al. J Dermatol 2009; 36: 202-8

The positive rates of dermatophytes isolated and identified by conventional methods are rather low. Moreover, clinical isolates sometimes show atypical morphology, and in such cases microscopic methods are not applicable for identification. The present study was performed to assess the utility of specific polymerase chain reaction (PCR)-based methods for *Trichophyton rubrum* and *Trichophyton mentagrophytes* as diagnostic tools for dermatophytoses. Both conventional morphological identification and specific PCR methods based on the nuclear ribosomal internal transcribed spacer (ITS). DNA sequence were performed to identify dermatophyte species from clinical specimens of patients who visited Kawasaki Social Insurance Hospital between 16 May and 17 August 2005. Specific PCR methods were also directly applied to clinical specimens, and the results of the two methods were compared. The clinical samples examined consisted of 126 skin scale specimens and 80 nail specimens. The positive rates of culture isolation from clinical specimens were 67% and 33% for skin scale and nail specimens, respectively. In contrast, PCR analysis yielded a positive rate of 100% for clinical isolates from both skin scales and nails, and rates of 95% and 99% were obtained by direct application to clinical specimens. The results of the present study indicated that specific PCR is highly advantageous as a diagnostic tool for detection and identification of dermatophytes on direct application to skin scale or nail specimens.

Methods

Clinical specimens consisted of 80 nails. Nail specimens, the same amount of material required by culture method, were kept at +150°C, crushed with a mechanical crusher and placed in a lysis buffer. The samples were then incubated at 100°C for 20 min. and mixed with 150µL of 3.0 Mol sodium acetate, kept at -20° C for 10 min. and then centrifuged for 10 min. The supernatants were extracted once with phenol/chloroform/isoamyl alcohol, and subsequently extracted once with chloroform. DNA was precipitated with an equal volume of isopropanol, washed with 150µL of 70% ethanol dried and suspended in 50µL of ultra pure water. Aliquots of 2µL of the resultant solutions were used as templates for the first PCR. The total time required to prepare the DNA was 80 min.

The authors compared the results of morphological analysis with those of PCR-based clinical isolate cultures in SDA and of clinical specimens obtained from dermatophytosis patients. In comparison with the results of culture-based methods, PCR-based analyses of clinical specimens showed excellent positive results when applied to both skin scale and nail samples. PCR-based methods enable the accurate identification of the species in clinical dermatophytosis specimens within one day, even in cases in which no isolates are obtained by culture.

COMMENTARY R. BARAN

The results of the present study indicated that specific PCR is highly advantageous as a diagnostic tool for detection and identification of dermatophytes on direct application to skin scale or nail specimens. We wonder why PCR is not used more extensively.

Osvaldo CORREIA

Association between morphological changes of nail and nail arsenic level in patients with arsenicosis

Shafiquzzaman M, Jahan MK, Rahman MM, Islam MT, Miah MA, Kamal M, Islam MM, Choudhury AM, Chowdhury SA, Mohammad N. Mymensingh Med J 2009; 18 (1): 27-30

The aim of this study was to investigate the relationship between the morphological changes of nail and nail arsenic level, in arsenicosis patients. This was carried out in Bangladesh.

Arsenic is a metal-like substance present in small amounts in Nature. Elevated levels of arsenic can be found in groundwater, and may also be the result of contamination caused by dangerous waste or industries. Drinking water containing high levels of arsenic may cause different health problems (skin, liver, respiratory, gastrointestinal, cardiovascular, urinary, nervous and affecting the endocrine system). Hyperpigmentation, hyperkeratosis and nail alterations (brittle nails and Mees' lines) are the main dermatological manifestations.

About 30% of water taken from wells in Bangladesh is known to have more than 0.05 mg arsenic per liter, which is the danger limit. Almost one quarter of the Bangladesh population drink potentially fatal levels of arsenic. Intake of arsenic above the maximum level over a period of six months to 2 years or more produces arsenicosis.

The present case-control study was conducted to find out the association between morphological changes of nail and nail arsenic level in 30 arsenicosis patients presenting with more than 1,08 mg/kg nail arsenic level compared with 30 controls of the same study areas with normal nail arsenic level (0.43 mg/kg). The majority of arsenicosis patients were male (56.67%). The mean age of the cases was 43.07+/-13.73 years. Nail changes were found in 26.67% of cases. Most were nail dystrophy (23.33%) and the rest were Mees' line (3.34%). No nail change was found in the control group. The cases presenting nail changes had a significantly higher duration of intake of arsenic contaminated water, compared with patients without nail changes. However, there was no correlation between nail changes and nail arsenic level for nail dystrophy and Mees' line.

COMMENTARY O. CORREIA

The analysis of trace elements in biological samples will extend our understanding of the impact that environmental exposure to these elements has on human health. Arsenic can be measured in blood, urine, hair, or nails. Of these, a urine test is the simplest way to discover if somebody has been exposed to arsenic at levels of concern. Hair and nail tests show if someone has been exposed to arsenic in the past. Measuring arsenic content in nails has proven useful in studies evaluating the chronic body burden of arsenic.

A person can come into contact with arsenic in many different ways. The largest source of arsenic is in the food we eat. Most foods, including vegetables, fish, and seafood, contain some arsenic. Arsenic in groundwater can enter the body either by drinking the water or by eating food cooked in the water.

Making a diagnosis of arsenicosis nowadays can be important in an era of globalization with migration to and from different parts of the world. Clinicians must be aware of particular nail signs that can help to make an early diagnosis. Many systemic symptoms can occur after prolonged exposure. Besides hyperpigmentation and hyperkeratosis nail alterations may be seen. Mees' lines are a typical sign of arsenic poisoning. They usually appear as a single, but occasionally multiple, transverse white band that moves distally with nail growth. These bands typically appear 4 to 6 weeks following an acute episode of arsenic poisoning. Beau's lines, onychomadesis, longitudinal brown hyperpigmented bands, as well as diffuse blackish-brown discoloration of the nail plate have also been described in arsenic poisoning (in Baran and Dawber's Diseases of the Nails and their Management. Blackwell Science, 2001).

Osvaldo CORREIA

Marked improvement in nail psoriasis during treatment with adalimumab

Irla N, Yawalkar N. Dermatology 2009; 219: 353-356

Nail psoriasis affects 55% to 90% of patients with cutaneous psoriasis and psoriatic arthritis, respectively. It frequently represents a significant impact on patients' quality of life.
Traditional treatments for nail psoriasis, which include topical (steroids and vitamine D derivatives either isolated or combined, cyclosporin, 5-fluorouracil, antralin) and intralesional (steroids) may be time-consuming or painful. Systemic agents (methotrexate, cyclosporine and acitretin) can be limited for prolonged use because of potential systemic toxicity. Biologic therapies have demonstrated efficacy for plaque psoriasis and psoriatic arthritis; these therapies may be particularly promising for the treatment of nail psoriasis as both groups of patients have a high incidence of nail dystrophy. The biologic therapies adalimumab, alefacept, efalizumab, etanercept, and infliximab have clinically demonstrated significant improvements in nail psoriasis.

The aim of this study was to report the rapid improvement in nail psoriasis under adalimumab monotherapy with maintained effectiveness, despite intermittent treatment, as well as long remission after therapy discontinuation.

A 36-year-old male with severe plaque psoriasis and psoriatic nail dystrophy in all finger and toenails was treated with adalimumab (80 mg loading dose and thereafter 40 mg every other week) and a marked improvement was seen within 2-3 months on fingernails and 7 months on toenails. At this time the treatment was discontinued, but there was a relapse after 4 months. A similar re-treatment was then introduced with re-improvement after 3-4 months. The other patient, a 46-year-old male, had a plaque psoriasis and psoriatic arthritis with severe psoriatic nail dystrophy. He was treated in a similar way to the first patient with an almost complete resolution of his nail involvement after 8 months of treatment. The treatment was then discontinued and the patient remained clear of disease (skin, joints and nails) for eight months.

COMMENTARY O. CORREIA

Traditional treatments for nail psoriasis, which include topical, intralesional and oral therapy may be time-consuming, painful or unsafe when administered over a long period. Biologics are promising for the treatment of nail psoriasis. The biologic therapies adalimumab, etanercept and mainly infliximab have demonstrated clinically important nail psoriasis improvements (Fig 1-2). Maintained effectiveness, despite intermittent treatment, as well as long remission after adalimumab therapy discontinuation is promising. Large-scale, long-term trials are needed to prove these results for all the biologics and to further evaluate biologic therapies for the treatment of nail psoriasis.

Fig1 - Nail psoriasis (before treatment)

Fig2 - Result after treatment

Exposure to toxic agents alters organic elemental composition in human fingernails

Schumacher E, Dindorf W, Dittmar M. Sci Total Environ. 2009 Mar 15;407(7):2151-7

The human fingernail plate is highly keratinized. The keratin structure is held together by disulfide bonds. The organic elements sulfur and nitrogen are present almost exclusively in amino acids of the nail plate. The aim of this study is to analyze whether occupational exposure to harmful chemical agents alters the organic elemental composition of fingernails.

In this paper 71 workers (49 hairdressers - 25 males and 24 females - and 22 male painters) compared with 49 unexposed controls (24 males and 25 females) were submitted to an analysis of the organic elemental composition of fingernail fragments.

Occupational exposition to harmful agents affects the keratin structure and composition of fingernails. Hairdressers and painters are at particular risk. Painters are mainly exposed to organic solvents (e.g., benzole and acetone) and hairdressers are exposed to oxidants and reducing agents, which can affect protein structure of their fingernails (e.g. dyes, pigments, and bleaching agents which contain hydrogen peroxide and ammonium peroxodisulfate).

All subjects completed a questionnaire with respect to their exposure to toxic agents, and observed changes in their fingernail structure and colour.

Both painters and hairdressers reported work-related significant changes in strength and pigmentation of their nails. Many hairdressers additionally observed changes in the colour and structure of their nails.

Nail clippings were analyzed for sulfur, nitrogen, carbon and hydrogen contents using an automatic elemental analyzer. Results showed that both painters and hairdressers had lower percentages of sulfur, but higher percentages of carbon. Sulfur content was lowest in those hairdressers who reported structural changes in their fingernails. As a consequence the relation carbon / sulfur and nitrogen / sulfur had increased in both groups of workers. The hydrogen content of fingernails was lower in hairdressers, and this is related to the use of substances which dehydrate their fingernails.

The decreased sulfur content in the fingernails of painters and hairdressers can be attributed to the effects of occupationally-used chemical agents on their nails. Nail keratin requires sulphation and disulphide bond formation for structural integrity. Disulfide bonds are important for the folding, structure and function of keratins. Harmful substances containing alkaline and acid groups break down the disulfide bonds of the amino acid cysteine in the nail keratins. For example, formaldehyde, which is found in hair shampoos, oxidizes to form formic acid, which reduces the acidic groups of proteins and destroys acid sulfur groups in nail proteins. Formaldehyde is also found in emulsion paint and lacquer containing biozids used by painters. Another reducing agent is hydrogen peroxide, present in bleaching substances.

In conclusion, this paper proves that occupational use of harmful substances leads to decreased sulfur levels in exposed people, due to the decrease of sulfur-rich proteins in the nails, resulting from destruction of disulfide-bonds by alkaline and acid groups. They also suggest that the ratio carbon / sulfur could be a useful indicator as to the amount of damage done to nail protein by harmful agents.

COMMENTARY O. CORREIA

This interesting study of the elemental composition of human fingernails of painters and hairdressers emphasizes the professional risk of these workers. The type and number of substances (e.g. shampoos, dyes, and perm solutions) plus multiple exposure to chemical agents affect the keratin structure of fingernails leading to considerable loss of sulfur-rich proteins in the nails. The consequence is the destruction of the disulfide-bonds by alkaline and acid groups.
A significant association between the development of occupationally-induced hand dermatitis and a history of atopy has been described in hairdressers. Xerosis is a main feature. Different nail alterations, such as thinning, onycholysis, onychoschisia, pitting, transverse grooves, onychorrhexis and koilonychias, have been described in these workers. For the prevention of these hazards, improved chemicals, equipment, hygienic education and the use of gloves with less powder and emollients are necessary.

Osvaldo CORREIA

Nail toxicity induced by cancer chemotherapy

Gilbar P, Hain A, Peereboom VM. J Oncol Pharm Practice, 2009: 15: 143-155

This paper provides a fresh review of literature (MEDLINE and EMBASE: 1996-2008) related to chemotherapy-induced nail toxicity. It includes clinical aspects, incriminated drugs, prevention and therapeutic measures.
Nail toxicity is an uncommon adverse effect of drug intake. A large range of drugs has been implicated, but cancer chemotherapeutic agents are one of the most frequent types of drugs, as the continuously dividing nail matrix cells are easily disturbed by antimitotic activity. One or several nails can be involved. Toxicity may be asymptomatic and limited to cosmetic concerns. However, more severe effects, involving pain and discomfort can occur. Most of the effects are transitory and disappear following drug withdrawal, but some can persist. Diagnosis can be difficult, because nail changes may appear several weeks after drug intake and symptoms often improve without drug withdrawal in patients taking multiple drugs. Re-challenge is usually negative and non-drug causes may be involved. Frequently not all the nails are involved and there is poor understanding of the pathogenesis of nail damage.
Symptoms vary depending on which nail structure is affected and the severity of the insult (table 1 and 2).
A suspected diagnosis of chemotherapy-induced nail toxicity can be made when a drug was taken 2-3 weeks prior to the symptoms. Re-challenge is not recommended since nail symptoms may not re-occur, and nail changes may disappear without interruption of the treatment. Other conditions such as graft-versus-host disease and different cancers, may mimic drug-induced alterations. A grading scale for nail toxicity is shown in table 3.
Several antineoplastic drugs have been implicated, namely taxanes (docetaxel and paclitaxel), anthracyclines (daunorubicin and doxorubicin) and the recent epidermal growth factor receptor (EGFR) inhibitor therapies (cetuximab, gefitinib, imatinib) as well as combination chemotherapy regimens.

Prior to treatment it is important to warn and educate patients about potential nail toxicities. Appropriate nail care should be advised. In some cases, topical corticosteroids and antibiotics have been suggested. Frozen glove therapy has been suggested for the prevention of docetaxel-induced onycholysis and skin toxicity.

COMMENTARY O. CORREIA

This paper summarizes the recent publications on nail toxicity induced by cancer chemotherapy. It will be a helpful instrument for medical doctors who treat cancer patients. It summarizes the different clinical presentations and definitions of nail toxicities, identifies the main drugs involved, describes the most frequent nail toxicities for each drug and gives general recommendations for prevention and treatment of adverse nail effects induced by cancer chemotherapy. However, there are not enough photos representing each nail toxicity in the paper.

Table 1 - Clinical presentation / related to the nail structure involved
Damage to the nail bed
Onycholysis (Fig1)
Apparent leukonychia
Alterations to nail blood flow
Hemorrhages (Fig 2)
Ischaemic changes
Damage to the nail matrix
Beau's lines (Fig 2)
Onychomadesis
True transverse leukonychia
Nail thinning or fragility
Alteration of nail growth rate
Melanonychia
Damage to the proximal nail fold
Paronychia
Periungual pyogenic granuloma

Table 2 - Definition of common nail toxicities	
Name	Description of condition
Beau's lines	Transverse depression of the surface of the nail plate
Onychomadesis	Whole-thickness groove, dividing nail into two parts, typically leading to shedding of the nail plate
Mees' lines	Nail plate parakeratosis causing white, transverse, parallel nail bands (true transverse leukonychia)
Melanonychia	Melanin pigmentation of the nail plate
Onycholysis	Separation of the nail plate from the nail bed
Muehrcke's lines	Multiple, white, transverse pale bands separated by strips of pink nail bed which fade on digital compression (apparent leukonychia)
Splinter hemorrhage	Multiple, longitudinal, tiny, purple-to brown streaks in distal nail bed.
Subungual hematoma	Nail bed hemorrhage causing red-to-black discoloration
Paronychia	Inflammation and redness of proximal nail folds.

Table 3 - Grading of nail toxicity	
Grade	Description
1	Discoloration, ridging (koilonychia), pitting
2	Partial or complete loss of nail; pain in nail bed
3	Interfering with activities of daily living

Fig 1- Onycholysis due to docetaxel.
Correia O et al. Nail changes secondary to Docetaxel (Taxotere ®). Dermatology 1999; 198: 288-90

Fig 2 - Subungual hemorrhage due to docetaxel.
Correia O et al. Nail changes secondary to Docetaxel (Taxotere ®). Dermatology 1999; 198: 288-90

Osvaldo CORREIA

Approach to managing patients with nail psoriasis

Reich K. JEADV 2009 (Suppl.1): 15-21

Psoriasis is a chronic inflammatory skin disease which affects at least 2% of the population.
It has important emotional, social and physical impact on quality of life.

Plaque-type psoriasis is the most common form (80% of cases), guttate occurs in 10% of cases, and erythrodermic and pustular forms each occur in less than 3% of patients. Up to one third of patients with skin psoriasis develop psoriatic arthritis (PsA), including distal interphalangeal joint involvement (dactylitis, enthesitis, osteolysis and periarticular

Fig1 - Psoriatic arthritis (dactylitis and enthesitis)

new bone formation) (Fig 1). Nail involvement occurs in up to 50% of patients with psoriasis, with an estimated lifetime incidence of 80-90% (table 1 summarize clinical signs). Nail psoriasis occurs more frequently in patients with severe disease such as those with PsA, with a prevalence of 70-80% in this latter group. There is a positive association between nail psoriasis and duration of skin lesions, and between its severity and that of skin and joint involvement. However, nail psoriasis occurs in 40% of patients with mild psoriasis. Between 1% and 5% of patients have affected nails without skin lesions. Affected nails are often thick and/or painful, causing patients functional impairment and psychological stress, and frequently leading to avoidance of everyday activities.
Different modalities of treatment of nail psoriasis have been proposed (table 2). Conventional treatments of nail psoriasis are frequently considered inconvenient by patients, and are limited by adverse effects or inefficacy. Biologic anti-TNFα agents have been used with encouraging results (Fig 2-3). This paper reviews more detailed data of the multicentre, double blind EXPRESS (European Infliximab for Psoriasis (Remicade) Efficacy and Safety Study) trial. Infliximab 5 mg/kg at weeks 0, 2, 6, and then every 8 weeks significantly improved nail psoriasis, evaluated by the Nail Psoriasis Severity Index (NAPSI) in 378 patients with moderate to severe psoriasis. Significant improvement was reported as early as week 10, and at week 50 full nail clearance was evident in 45% patients. Nail bed NAPSI scores improved by 69.2% with infliximab vs 18.4% with placebo. Lunula red spots and pitting were most responsive, their incidence decreased to 4% and 43.6% by week 50, respectively, but nail plate crumbling or dystrophy was still present in 33.3% of affected patients. With nail bed lesions, the incidence of onycholysis, splinter haemorrages, "oil drop" discoloration and hyperkeratosis at week 50 was 26.8%, 12%, 18.8% and 21.3%, respectively. The response was independent of PsA, although nail improvement correlated with skin improvement during the course of the study.

COMMENTARY O. CORREIA

This paper reviews the clinical signs of nail psoriasis and the different therapeutic approach either local or systemic. Biologic treatment with anti-TNFα has been reviewed as a new and promising treatment, in particular infliximab, to treat nail psoriasis. Although all the biologic approved drugs for psoriasis had showed efficacy on nail psoriasis we must not forget the cost of these drugs when we treat isolated nail psoriasis in particular, when limited to some nails and not debilitating. Local (either topical or intralesional) shows interesting results (Fig 2, 3, 4) but combined treatments with conventional systemic must be advised namely in extensive nail involvement, in particular, when psoriatic arthritis is present. Anti-TNFα biologic drugs are a promising treatment, namely when conventional systemic drugs are inefficacious or side effects are evident. We think that combined treatments, with different mechanisms of action, are the best way to control this inflammatory debilitating disease.

Table 1	
Clinical signs	
Nail matrix psoriasis	Nail bed psoriasis
pitting (Fig 5) in 70% of patients	"oil drop" discoloration ("salmon patch") (Fig 7)
superficial > abnormalities in the proximal matrix	splinter haemorrhages (Fig 8)
deeper > abnormalities of the intermediate, ventral and dorsal nail matrix	subungual hyperkeratosis (Fig 7)
leukonychia	onycholysis
erythema of the lunula	
dystrophy (Fig 6)	

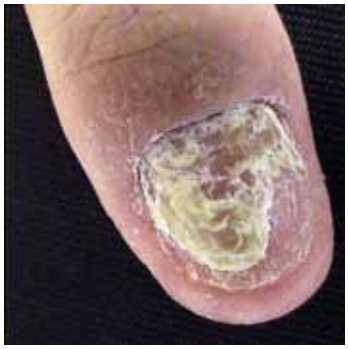

Fig2 - Before combined topical and intralesional treatment (04-09-2008)

Fig3 - During combined topical and intralesional treatment (15-10-2008)

Fig4 - After combined topical and intralesional treatment (14-12-2009)

Table 2
Treatment options
vitamin D3 derivatives (calcipotriol, calcitriol, tacalcitol)
corticosteroids (betamethasone dipropionate, clobetasol and others) combined calcipotriol and betamethasone dipropionate
Intralesional injections
corticosteroids (triamcinolone acetonide and others)
combined topical and intralesional
Phototherapy
moderate improvement with PUVA in nail bed lesions
Conventional systemic therapy
cyclosporine
acitretin
combined topical and systemic
Biologic therapy
etanercept
adalimumab
infliximab

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Fig5 - Nail pitting.

Fig6 - Dystrophic nail psoriasis.

Fig7 - "Oil drop" discoloration ("salmon patch") and subungual hyperkeratosis.

Fig8 - Splinter hemorrhages.

Sophie GOETTMANN

Nail dystrophy and bony involvement in chronic sarcoidosis

Santoro F, Sloan SB. J Am Acad Dermatol 2009; 60:1050-1051

The authors present the case of a 33-year-old patient who had had lung and skin sarcoidosis for ten years and twenty-nail dystrophy, which had evolved for over a year.
Longitudinal hyperstriation with distal fissuring, proximal apparent leuconychia and distal brownish colour existed clinically. A punch biopsy revealed epitheloid cells surrounded by a lymphoncytic infiltrate, with no central necrosis. The examination with polarised light remained negative, as did the colouring to detect micro-organisms. The culture did not enable isolation of dermatophytes. Intra-bony cysts compatible with sarcoidosic bony involvement showed up on hands and feet with radiography.
Skin involvement is present in 20 to 35% of sarcoidosis. Nail involvement is rare or unreported, and varies from one in 400 cases to one in 188 cases.
Sarcoidosic granuloma can be localised from the proximal nail fold to the hyponychium. Multiple abnormalities may be observed. Fragility, lamellar onychoschizia, longitudinal hyperstriation, pitting, pachyonychia, splinter haemorrhages, dyschromia, atrophy, onychoptosis, anonychia, pterygium.
The majority of patients presenting nail involvement also presented bony involvement, with the presence of bony cysts and irregular structure visible on X-Rays.
86% of patients with nail involvement also present lung lesions and a thoracic X-ray is recommended.
Differential diagnosis is mainly necessary with lichen, dermatophytosis, tuberculosis, coccidiomycosis, amyloidosis, psoriasis and annular granuloma.
A biopsy of the proximal nail fold or the nail bed is indicated.
Treatment of nail involvement is based on general corticotherapy, hydroxychloroquine, local steroids, intra lesional steroid injections.

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Nail involvement is rare in sarcoidosis and can be seen in disseminated forms. There is often skin involvement of the fingers (lupus pernio,dactylitis).
Nail involvement can be either mono- or polydactylous. Most often the proximal nail fold, associated with sarcoidosis granuloma is tumefied and erythematous. Matricial pressure is responsible for matrix disturbance that reveals a longitudinal hyperstriation, thinning of the nail plate (Fig 1), fragility and onychoschizia and even atrophy and pterygium.
Splinter haemorrhages and dark dyschromia are not infrequent.
Matricial involvement with normal periungual tissues, granuloma of the nail bed and hyponychium are responsible for onycholysis and can be observed.
Radiological involvement of the underlined phanlanges is frequent, but can be slowed down. The treatment is based on general steroid therapy and hydroxychloroquine. Local corticosteroids under occlusion and especially intralesional steroid injections can be effective, at least concerning the involvement of the proximal nail fold.
They are particularly appropriate when few digits are affected.

Fig1 - Monodactylous nail involvement in a systemic sarcoidosis. Erythematous paronychia, trachyonychia and nail plate thinning are present. Intralesional injections of corticosteroids in the proximal nail fold and nail matrix are appropriate.

Sophie GOETTMANN

Benign eccrine poroma of the dorsum of the hand: predilection for the nail and P53 positivity

Al-Qattan MM, Al-Turaiki TM, Al-Oudah N, Arab K. Letter to the Editor. J Hand Surg Eur 2009; 34: 402-403.

Eccrine poroma are benign tumors which arise from the duct epithelium of the intra-epidermal portion of the eccrine sweat glands. These glands are spread throughout the skin but are concentrated in other areas such as the sole of the foot and the palm. This explains the fact that almost all cases of eccrine poromas reported in the hand have been in the palm.
A 55-year-old man presented with a one-year history of a solid growing mass over the proximal nail fold of the left thumb. Excisional biopsy and coverage with a split skin graft was carried out. Histological examination of the lesion revealed uniform basaloid cuboidal cells with occasional areas of cystic degeneration. There was abundant mitosis, reaching up to five per high power field, but no atypia or invasion. P53 staining showed diffuse nuclear positivity. A diagnosis of benign eccrine poroma with increased mitosis was made. There was no recurrence six months after surgery.
P53 protein is a transcription factor encoded by a specific gene on the short arm of chromosome 17.
It regulates the cell cycle and acts as a tumour suppressor. Hence, mutation or abnormalities of the P53 gene/protein will result in cancer.
Another interesting observation was the positivity of the lesion in this case (which had a high degree of mitosis) to P53 protein, which was recently observed in some eccrine tumours. This is interesting because P53 mutations are thought to play a role in the progression of benign poromas into porocarcinomas.
The incidence of this malignant degeneration is unknown, because these tumours are rare, although eccrine porocarcinomas have been reported both in the palm (Da Silva et al. 1997) and the periungual area of the hand.

COMMENTARY S. GOETTMANN
Eccrine poroma of the nail unit is an exceptional benign tumour (only a few published cases), it has been described on the folds, the nail bed and the hyponychium.
It more often affects the toes and is a single sessile, sometimes with raised nipple-like pediculated prominences, pinkish or red, sometimes brownish, sometimes bleeding easily, soft, with an irregular surface and slow growth. When located on the distal nail bed, it is responsible for onycholysis. It is then necessary to debride the nail to see the tumour.
If the area surrounding the nail is massively involved, the distal extremity seems wider and the nail plate becomes atrophic or even inexistent.
The differential diagnosis includes pyogenic granuloma covered with epidermis (this lesion may easily bleed), a wart, a fibroma, an amelanotic melanoma and a carcinoma.
The treatment consists of complete surgical removal of the lesion. The diagnosis is rarely evoked before operating. Histological examination finds an epithelial proliferation continuous with epidermis, well defined and made up of cells with basophils nuclei, with the presence of canal-like formation and fibro-hyalin stroma. Recurrence is rare. One case has been reported for a lesion on the big toe of a woman, three years after the first surgical treatment.

Dealing with melanonychia

Tosti A, Piraccini BM, Cadore de Farias D . Semin Cutan Med Surg 28 : 49-54.

Melanonychia is a pigmentation of the nail produced by melanin presenting most often as a longitudinal pigmented band. Transverse or total pigmentation is rare. Histologically longitudinal melanonychia (LM) is due to an activation of the matricial melanocytes, a benign melanocytic hyperplasia (lentigo,nævus) or is malignant (melanoma).
Melanonychia is due to melanocytic activation: subjects with dark phototypes often have several nails involved: 77% of young Afro-Americans, and 100% of those over 50-year-old, 10% of young Japanese and 20% of adult Japanese. This type of melanonychia may be induced by drugs, they may be post inflammatory, onychomycotic, rarely systemic (Addison's disease), tumours (benign and malignant)(Fig 1, 2).
Melanonychias due to melanocytic hyperplasia:
- lentigo: (benign melanocytic hyperplasie). The number of melanocytes of the basal layer is increased, (5 to 31 mm of basal membrane).
Nævi: more often observed in young patients. They may be congenital or acquired and represent 12% of LM in adults and 48% in children (Fig 3). Fingers are more often involved than toes. Very dark melanonychias are visible through the cuticle and the proximal nail fold (PNF).
Melanonychia: may fade, which indicates a decrease of the activity of the nævus. Naevi are more often junctional in children than in adults.
The rate of malignancy is unknown but is probably very low.

Fig1 - Rubbing melanonychia of the 5th toenail in a patient with phototype 4. Cuticle is hyperkeratotic and pigmented.

Fig2 - Functional longitudinal melanonychia by simple melanocytic activation in a patient from Mauritius.

Fig3 - Matricial nævus in the process of widening in a 3-year-old child. The distal pigmented margin of the nail plate is fragile.

Fig4 - In situ melanoma of the big toenail with wide pigmented band enlarging progressively for more than 3 years, with heterochromia in a 60-year-old patient.

Fig5 - In situ melanoma presenting with several thin median lines which appeared progressively. They are associated with heterochromia, irregular width and loss of parallelism.

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dealing with melanonychia

Melanoma: represents only 0.7 to 3.5% of nail melanomas. 1 to 2% of Caucasian melanomas, 10 to 23% in Asians and 25% in Afro-Americans. Prognosis is rather poor. A pre-existing trauma is often reported, but its responsibility is not proven. Big toes and thumbs are found in several series (Fig 4, 5). Matricial melanoma starts as an LM, whereas it shows a subungual pigmented nodule or may be achromic (25 to 30% of the cases) when it begins in the nail bed. Periungual pigmentation (Hutchinson's sign) is an indication for biopsy.
Dermoscopy: cannot examine the matricial lesion, but only the pigment penetrating the nail plate.
Pre-op dermoscopy of the free edge of the nail may be helpful in localising the level of the pigment within the nail (when superficial, the pigment comes from the proximal matrix, when ventral it appears in the distal matrix). Regular and parallel fine lines on a grey background suggest a melanocytic activation. Brown or black parallel longitudinal lines tend to indicate a nævus. Irregularities in colour, thickness, spacing and parallelism may evoke a melanoma. Dermoscopy also enables us to observe any micro sign of Hutchinson, difficult to see with the naked eye. Finally, pre-op dermoscopy allows a better approach to the pigmented lesion and helps to delineate the excisional margins.
How to deal with LM: the patient's history, clinical examination and dermoscopy, usually enables diagnosis of a melanoychia due to melanocytic activation. Therefore, it is not necessary to propose frequent investigation and follow-up. It is advisable to remove the lesions in adults due to melanocytic hyperplasia and to wait for puberty in children while monitoring frequently.
A partial biopsy may give a false negative, responsible for diagnostic delay and should not be suggested to the patient. Histology should examine the total lesion. The shave biopsy leaves less dystrophic sequelae.
Histological differentiation between lentigo and in situ melanoma is sometimes difficult. It should take into account the increase in the number of intraepidermal melanocytes (> 40/mm of the length of the basal membrane), severe atypia and inflammation.
Two questions:
• melanonychia in children: should we adopt a "wait and see" attitude? Authors disagree about the necessity of removing lesions caused by melanocytic hyperplasia and the ideal age to operate a patient. Further studies are necessary. Does dermoscopy play a role in deciding about surgery? The intervals at which the patient should be seen by a physician should also be defined. The value of matricial excision in shave biopsy should be confirmed.
• the exact role of dermoscopy: the superiority of dermoscopy of the nail plate versus clinical examination for early diagnosis of melanoma has not yet been proven.

COMMENTARY S. GOETTMANN

Any LM in adulthood, especially when single, should at first sight rule out a melanoma. Medical history, enlargement of the lesion, the search for micro trauma, periungual pigmentation and dermoscopy are the first approaches.
In cases of simple melanocytic activation, the patient's fingernails should be examined once a year, and toenails every 18 months for obviously functional lesions. If the lesion is stable, the patients should be aware that any modification of the LM must be monitored by their dermatologist.
When the lesion seems to correspond to a benign melanocytic hyperplasia (lentigo, nævus) medical supervision may be suggested, but only to reliable patients. However, the possible onset of an atypical melanocytic proliferation cannot be disregarded.
A regular widening of the band will lead to excision of the lesion. The decision to excise the pigmentation must take into account the personal and family history of the patient age, reliability of the follow-up, anxiety of the patient and the possible sequel if an operation is performed (finger, toe, medial or lateral, width of the LM).
Excision of LM enables histological diagnosis, and avoids a lengthy follow-up which is difficult for some patients.
In children, melanocychias correspond to benign melanocytic proliferations in 80% of the cases (lentigos or nævi). Nail melanoma is exceptional in children, and there is little data concerning the transformation of LM into melanoma in adulthood. However, some cases have been observed. Removal of the lesions should be advised in cases where surgery will not leave a marked dystrophy, and there should be annual medical supervision for the other cases (12 months for fingers, 18-24 months for toenails).
It is advisable to wait for the LM to stabilise before operating, as premature excision may lead to a relapse on the edges of the removed areas.
Matricial shaving leaves fewer sequels than other techniques. Indications for these methods have to be defined.
But how can we be absolutely certain that this shaving of lentigo or nævus is really complete?

Sophie GOETTMANN

Observer agreement in toenail disorders: implications for diagnosis and clinical research

Ginarte M, Garcia-Doval I, Monteagudo B, Cabanillas M, Labandeira J, Florez A, et al. Br J Dermatol 2009; 160: 1315-1317.

Toenail disorders may be caused by many different groups of conditions. Fungal infections are the most frequent cause, leading to 40% of the cases of nail disease, and affect 10% of the population.
Clinical guidelines for treatment of onychomycosis suggest that therapy should start after confirmation of the diagnosis by direct examination, fungal culture or pathology.
Up to 75% of dermatologists do not follow these guidelines and give empirical therapy, suggesting that guidelines are not well accepted.
If diagnosis could be based on clinical findings, it would save both the patients' time and the resources of the health system.
The authors' aim was to describe observer agreement in nail findings as described by dermatologists in standard clinical practice, focusing on signs that could be useful for diagnosis of onychomycosis.
A prospective cross-sectional study was carried out between March and April 2008. After informed consent, five pairs of dermatologists inspected the nails of all consecutive new patients (over 30-year-old) in their outpatient clinics. Any patient with toenail disease who had onychomycosis as a differential diagnosis was included. All dermatologists were senior consultants, with more than 5 years of clinical experience, and had not received any specific training for this study. Each dermatologist independently described the nails using a predefined questionnaire. They noted 10 findings based on previous history and 14 physical signs of 86 patients.
They agreed as follows:
Previous history findings
- concerning diabetes, smoking and the use of public changing rooms or swimming pools: very good
- immune suppression (drugs or cancer), previous diagnosis of fungal disease and the worsening of toenail disorders: good
- previous diagnosis of arterial disease, trauma induced by work or sport and distal versus proximal or lateral versus central start of the lesion: moderate

Physical signs
- presence of the same disease in fingernails, abnormal plantar desquamation, deformity causing nail trauma, and subungual hyperkeratosis: good (Fig 1)
- presence of nail destruction, tinea interdigitalis, onycholysis, and the type of material obtained by subungual curettage (dust vs. hard): moderate (Fig 2)
- presence of longitudinal or transverse striae, trachyonychia, pachyonychia, and change in the colour of the nail plate: fair (Fig 2, 3).

Pitting was too infrequent to allow for k calculation.

Although agreement was adequate for some signs, there was no full agreement between experienced dermatologists describing nail findings in a clinical setting.
Concerning the clinical signs, the main problem was to establish a clear separation between pathological and "physiological" nail alterations, such as striae, especially in elderly patients. It seems that some findings do not have a clear definition, such as trachyonychia and pachyonychia, and dermatologists find it difficult to determine if they are present or not.
Previously described lower agreement rates concerning the presence of onycholysis and change in colour of the nail plate (different from that due to onycholysis) were surprising, as they seem to be obvious signs. The authors think that onycholysis is frequently associated with subungual hyperkeratosis and, in the presence of subungual debris, deciding if separation of the nail plate and nail bed is present is arbitrary.
They found that although agreement was not total, it was adequate for most signs. Agreement was low for the presence of pachyonychia, longitudinal or transverse striae, change in colour of the nail plate, and trachyonychia.
Whether agreement can be improved by training is not known.

COMMENTARY S. GOETTMANN

Some aspects of the nail are often mistakenly labelled onychomicosis. Not every toenail dystrophy is mycotic and nail abnormalities to repeated micro trauma are very frequent.
Only 30 to 40% of toenail disorders may be mycotic.
Theoretically, medical samples should be taken and in some cases histopathology of nail keratin should be carried out before prescribing an antifungal treatment, which is costly and sometimes complicated. This explains why many physicians omit these precautions before prescribing.
The authors of this publication theorize that both time and money would clearly be saved if the diagnosis of onychomycosis could only be clinical.
The study was carried out to compare data of medical background and clinical signs by experienced

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observer agreement in toenail disorders: implications for diagnosis and clinical research

dermatologists, who had examined patients who might have toenail onychomycosis. Agreement between doctors' clinical examinations was only 51% to 84% depending on the clinical signs. Physicians did not always agree on the presence or absence of certain clinical signs.
The semiology of the nail apparatus is not always easy to analyse for those doctors not used to examining nails several times a day.

Certain physiological aspects can be confused with clinical pathological signs (for example, longitudinal ridging, dyschromia ...). It is regrettable that mycological sampling was not carried out on all the patients examined by the physician, comparing clinical suspicion of onychomycosis and the final diagnosis. It would have been interesting to know the reliability of diagnosis based on clinical examination alone.

In all probability, the observer's customary proceeding plays an important role in the pertinence of clinical diagnosis.
Clinical suspicion of onychomycosis is based on thorough analysis of the clinical signs and their combination.
Semiology is limited to the nail apparatus and different pathologies show similar signs.
An imprecisely described sign is of little diagnostic value.
Micro semiology plays an important part in an area producing few clinical symptoms to interpret disorders.
A physician's experience and possible diagnostic training are very important elements.

Onycholysis is frequent in toenails and seen in various diseases, but its precise characteristics and the presence of other signs vary according to the aetiology.
Could a precise clinical diagnosis of onychomycosis by doctors postpone mycological sampling?
Dermatophytes are not the only pathogen agents responsible for this condition. Precision in prescribing a treatment is essential especially when systemic therapy is indicated, even if some clinical signs indicate a pathogen, such as perionyxis during Fusariosis.
Without mycological examination diagnosis cannot be certain.

Diagnosis of onychomycosis is based on clinical, mycological even histological comparison in some cases.
A better clinical approach by physicians would enable:
• saving on mycological sampling when there is no clinical indication of fungal infection
• a better global diagnostic approach in difficult cases, with better indication of mycological sampling and histology, taking into account clinical items such as false positive and false negative results.

Fig1 - Paronychia and onycholysis with subungual hyperkeratosis. Fungal infection due to *Fusarium*

Fig2 - Onycholysis of the thumb, irregular surface of the nail plate and leuconychia. Fungal infection due to *Trichophyton Soudanense* in an African patient.

Fig3 - Onychotillomania of the thumb, with milky leuconychia, onycholysis and subungual hyperkeratosis associated with *Trichophyton rubrum* infection.

Sophie GOETTMANN

Dermoscopic features of acral lentiginous melanoma in a large series of 110 cases in a white population

A.Phan, S. Dalle, S. Touzet, S. Ronger-Savle', B. Balme and L. Thomas
Br J Dermatol 2010 ; 162 : 765–771:

The importance of an early diagnosis of melanoma has been pointed out in many previous studies. The well-known ABCDE rule aims to improve recognition by clinicians of suspicious cutaneous pigmented lesions. However, this algorithm cannot be applied to acral locations. Acral lentiginous melanoma (ALM) is rare, but represents the predominant melanoma subtype on extremities.

Dermoscopy has been demonstrated to be a useful and non-invasive technique for the diagnosis of cutaneous pigmented lesions.

The aim of this study was to investigate all dermoscopic features in a large group of Caucasian patients with ALM, including the nail unit or amelanotic variants, in order to emphasize their diagnostic value in this particular rare subtype of melanoma.

The clinical and dermoscopic photographs of ALM used for this study were collected over a period of 13 years.

Three of the authors performed this analysis of all dermoscopic features and patterns independently from one another.

Concerning ALM of the nail apparatus, the dermoscopic patterns were classified as follows: brown or greyish coloration of the background, with regular or irregular lines, spacing and thickness, with or without parallelism disruption, presence of blood spots, linear microhaemorrhages, and onychodystrophy. In cases where Hutchinson's sign was present, the pigmentation of the periungual skin was also analysed. For achromic lesions, all dermoscopic findings and vascular patterns were noted: comma-like vessels, arborizing vessels, glomerular vessels, dotted vessels, hairpin vessels, linear irregular vessels, milky-red globules / areas, and multiple vascular patterns (three or more) within the same lesion.

110 cases were included in this study and the results were as follows: 44 (40%) were ALM of the nail apparatus (17 of the toenail and 27 of the fingernail).

Among these 44 nail unit lesions, 29 (66%) presented as melanonychia striata longitudinalis with variable width. Nail plate dystrophy was present in 19 (43%) cases. The most prevalent feature was the presence of irregular brown lines (70%) with variegation in colours, spacing and thickness, and disruption of parallelism.

Only one early ungual ALM presented with regular lines on a brown background. This in situ melanoma also showed a larger proximal than distal edge of the longitudinal band, lending the lesion a triangular shape.

Hutchinson's sign (pigmentation of the periungual skin) was present in 11 (25%) of the 44 ALM of the nail apparatus, and dermoscopy enabled detection of a micro-Hutchinson's sign (invisible to the naked eye) in 4 (9%) cases.

Subungual haemorrhage like "blood spots" [10 (23%) lesions] or linear microhaemorrhages [6 (14%) lesions] could also be seen, but always in association with other suspicious dermoscopic findings.

Thirty-seven cases (34%) of ALM either in palmoplantar skin or on the nail unit were clinically amelanotic, 25 (68%) being fully unpigmented and 12 (33%) only partially unpigmented. However, microscopic remnants of pigmentation were detected by dermoscopy in almost all clinically completely achromic lesions (21 of the 25 cases).

Five of the nine achromic ALM of the nail apparatus presented as a reddish tumour with milky-red areas, red spots and partial or complete destruction of the nail plate. The lunula had disappeared in seven cases.

The most prominent vascular pattern found in achromic ALM consisted in milky-red areas (95%), dotted vessels (43%), hairpin vessels (41%) and linear irregular vessels (49%).

The two most prevalent dermoscopic patterns in ALM in this study were PRP and IDP. Both were the most prominent features in primary palmoplantar ALM, as well as in the periungual pigmentation in cases of ALM of the nail apparatus (Hutchinson's sign) when present.

The detection of early ungual melanoma is one of the most challenging diagnoses in clinical dermatology. The classification of dermoscopic features of ALM of the nail apparatus was based on the ungual patterns previously described by the authors.

Almost all lesions exhibited a brown background with longitudinal irregular lines. Only one in situ lesion displayed a regular pattern. Two early lesions were associated with a triangular shape of the band due to an enlargement of the proximal edge of the longitudinal melanonychia. This early dermoscopic feature had not previously been reported. Microscopic Hutchinson's sign is rare and was noted in only four early (9%) ALM. Subungual haemorrhages, as blood spots or linear microhaemorrhages, were frequently found (in 23% and 14% of ALM of the nail apparatus, respectively). Their presence, regularly associated with subungual haemorrhage, cannot therefore rule out melanoma.

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The authors believe that before making the diagnosis of subungual haemorrhage the clinician has to make sure that no other feature, especially an irregular pigmented pattern, is present.
In the case of pigmented ALM of the nail apparatus, the most prominent feature is the irregular line pattern. Blood spots or micro-haemorrhages are frequent and do not rule out melanoma. In very early cases a triangular shape of the band is another criterion even when associated with a regular pattern of the lines.
Periungual pigmentation (Hutchinson's sign) is highly suggestive of melanoma.
Unpigmented ALM on both nail and volar skin is difficult to diagnose. Dermoscopy helps by showing remnants of pigmentation, polymorphic vascular structures and atypical vessels.

COMMENTARY S. GOETTMANN

Longitudinal melanonychia is frequent and presents a major problem for diagnosis, as it should not be left to evolve if it concerns melanoma. However, an excision of all the matricial pigmented lesions is not advisable if the melanonychia does not correspond to an atypical melanocytic proliferation, as this could sometimes result in a dystrophic sequel.
If longitudinal melanonychia is present, management depends on several criteria:
1- the patient's age
2- geographical origin
3- photo-type
4- if there has been any previous melanoma, either personal or family
5- medical history
6- any treatment which could be responsible for the pigmentation
7- and the existence of local factors, such as rubbing or friction.

Several clinical criteria should be taken into account: the monodactylic or polydactylic nature, the width of the band, the colour intensity, which can be monochrome or polychrome, the distinct or indistinct aspect of the edges, a periungual pigmentary extension, the duration and progression of the lesion (darkening and especially widening).
There are no clinical criteria for certainty (Fig 2).
Pigmentary periungual extension may be observed without being malignant, i.e in melanonychia caused by rubbing or friction or drug-induced and childhood nævi.
The most important clinical criteria are likely to be stability or, on the contrary, the progressive nature of the lesion.
Dermoscopy is an important diagnostic element. The dermoscopic aspect of melanoma seems to be specific enough when longitudinal lines are irregular in thickness and spacing and present no parallelism (Fig 1-3).
In this retrospective study this criteria was seen in 43 out of 44 cases, being inexistent in only one case, but the significant widening of the lesion, especially at the base, was evidence of the possibility of an atypical melanocytic proliferation.
Since this study was retrospective in the case of acral melanoma, it is not known if these signs can be found in benign lesions (melanocytic activation, lentigo or nævus).
Dermoscopy allows visualisation of Hutchinson's sign which is invisible to the naked eye, and in the presence of a potentially tumoral achromic lesion, detection of pigmentation, which helps to diagnose a melanoma.
The dermoscopic signs should be added to the list of criteria before taking any decision concerning longitudinal melanonychia.
Dermoscopic examination should be systematic when confronted with any potentially tumoral lesion of the nail.
Dermoscopy should also be used when monitoring lesions if no decision has been taken concerning immediate excision.
It would be interesting to know if, in case of evolution, the dermoscopic modifications precede the clinical changes and/or the widening of the band.
Future studies will certainly enable us to define the role of dermoscopy for diagnosis and for monitoring melanonychia.

Fig1 - Melanoma in situ - Progressive appearance of several bands of longitudinal melanonychia with different colours. Dermoscopy confirms irregularity of the lines and loss of their parallelism.

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Fig2 - Thin monochromatic longitudinal melanonychia with blurred borders in a patient with clear complexion. Star of melanoma in situ.

Fig3 -Multiple bands of longitudinal melanonychia on the 5th finger in an Iranian patient. Progressive onset. Pigmentation of the proximal nail fold. Dermoscopy shows pigmented, irregular lines. Melanoma in situ.

New tools in nail disorders

Bertrand Richert, MD, PhD, Nadine Lateur, MD, Anne Theunis, MD and Josette Andre, MD. Semin Cutan Med Surg 28:44-48

New Tools in Medical Imaging:
non invasive assessment may facilitate differential diagnosis and delineate tumours. Broad studies of imaging tumours of the nail apparatus with magnetic resonance imaging (MRI) have demonstrated that this technique is mostly valuable for diagnosing vascular lesions, cysts, glomus tumours, ganglion cysts and solid lesions. MRI requires specialized equipment, as the standard coils will not provide a proper image.

Ultrasonography is widely available. The clarity of the image depends on the structure of the tissue, its echogenicity, and several technical parameters. New generations of high-resolution ultrasound machines, reaching up to 15 MHz, can process great amounts of data. Ultrasound can supply information on the anatomy and pathological processes in real time with the possibility of measuring and calculating parameters of thickness and the volume of blood flow.
The nail apparatus contains tissues of various echogenicities, making it very suitable for ultrasound examination.

Characteristic ultrasound pictures can be produced for psoriasis, glomus tumours, and myxoid cysts. The use of contrast media may provide specific diagnoses. Further studies are still required.
Optical coherence tomography (OCT) works by emitting wave forms similar to ultrasound. The OCT probe sends infrared light (instead of acoustical waves), and its reflection is measured. The intensity is imaged as a function of position of the material reflecting the wave. This technique provides cross-sectional, tomographic images of tissue in situ and in real time. OCT imaging of the nail is easy to perform. Images clearly reflect the anatomical structure of the nail unit.
These structures can also be imaged by high-frequency ultrasound (HFUS), but because OCT has greater resolution than HFUS, it has the ability to discriminate subtle changes not detected by ultrasound.
OCT has a resolution approximately 20 times greater than MRI, but a low penetrance depth; hence, OCT and MRI are not always mutually exclusive. Doppler OCT may provide useful new information on nail vascular tumours.

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New Tools in Mycology Diagnosis:

The clinical standard for diagnosing onychomycosis is direct examination combined with fungal culture. We strongly advise the combination of potassium chloride, histopathology and culture when sufficient infected material is available, or if a nondermatophytes mold (NDM) is involved.

Chang proposed a modified approach to the histologic diagnosis. He decided to process the nail plate only if the subungual keratin was negative for hyphae, which accounted for 26% of their cases. Some physicians like to know the location of the fungus. As a result of the sampling technique, the Chang method lacks the ability to detect bipolar onychomycosis.

Nail histopathology is also a valuable tool when a NDM grows in culture. Fungal elements might be found in subungual keratin, but perforating hyphae, which are a clue to NDM invasion, are usually found in the lower or upper nail plate.

The reliability and availability of mycologic evaluation of pathology specimens is limited, with well-known rates of false-negative results. Few laboratories have expertise in mycology, erroneous results are frequent.

Immunochemistry, flow cytometry, in vivo confocal microscopy, and scanning electron microscopy cannot be proposed as valid alternative methods, because they are limited to even fewer laboratories, they are complicated, and are even more costly.

An essential step in understanding and treating onychomycosis is the identification of the fungus at the species level, as well as the assessment of its viability.

Polymerase chain reaction (PCR) has been extended to detecting the fungus directly from the nail clippings, thus allowing a diagnosis from small samples or in samples with little infection.

Also, PCR has allowed the discovery of different subtypes of *Trichophyton rubrum* which can be found simultaneously or at different times in the same patient. Moreover, this technique is time saving, less than 48 hours compared with the classic 4 weeks needed for the conventional technique.

It may be difficult to clinically evaluate the severity and burden of nail diseases, which explains the recent development of several indexes to quantify the severity of disease. A valid and reliable measure that captures the severity of onychodystrophy is important for both clinical and research applications. The NailQoL (Nail Quality of Life) represents a new concise, valid, reliable, and responsive instrument for measuring the burden of skin disease for American patients with onychomycosis.

A pilot evaluation suggests that Naildex (nail dystrophy severity index) may represent a new research method for quantifying the burden of nail disease. It has been shown to be reliable and has both face and construct validity. It is relatively time efficient and, as it does not involve imaging equipment, is inexpensive.

New tools in Forensics:

Drugs and biological substances are stored in nails, where they can be detected and measured, providing a history of drug intake and abuse, as well as toxin exposure and therefore represent a unique substrate for forensic purposes. Only a small specimen is required for analysis.

Fingernails are best for research of external contamination, but they only reflect the exposure for the previous 6 months. Although the great toenail is less exposed to external contamination, it provides information covering one year. Several techniques have been shown to be useful in the detection of various substances, such as DNA, pollutants (lead, nicotine) and metals in exposed workers (nickel, chromium) and poisons (arsenic, thallium).

In the future, more refined techniques will allow more specific and accurate diagnosis of drug intake and abuse, exposure to pollutants and may also help in the monitoring of some diseases from a simple nail clipping.

New Tools in Longitudinal Melanonychia:

Melanonychia striata always represents a dilemma for the clinician and the pathologist. Therefore, several techniques in the surgical, medical, and pathological field - aimed at a more accurate diagnosis of the pigmented band with limited postoperative dystrophy - have been proposed. Some authors have suggested dermoscopy of the nail bed and matrix after nail removal using a Dermlite® with polarized light with no direct tissue contact, thus maintaining aseptic conditions. Alternatively, dermatoscopic examination with direct tissue contact may be performed with clear antiseptic gels. The authors demonstrated very typical patterns highly correlated with histopathology. This technique makes it easier to locate pigmentation and enables perfect delineation of the surgical margins without avoiding omission of small pigment foci.

To lessen postoperative dystrophy, a novel matrix biopsy technique, called shave biopsy, was suggested by Haneke. This procedure removes the matrix epithelium and a thin layer of the underlying dermis, allowing histologic

examination of the whole pigmented lesion while limiting postoperative dystrophy. This new technique is very effective considering the discrete postoperative sequelae after removal of a large piece of matrix tissue. It allows the pathological examination of the whole lesion even for large bands. It avoids partial or total ablation of the nail unit for benign lesions. The technique entails training the surgeon and excellent collaboration with the pathology laboratory in order to correctly orientate and read the thin specimen. It is mentioned in several papers, but still needs to be validated.

Pathology also tries to improve ability to diagnose melanoma that might be, very challenging in some instances. Immunohistochemistry may help the pathologist and is being used more routinely. Little data has been published about nail apparatus melanoma (NAM). Immunochemistry seems to be particularly useful for the diagnosis of early melanomas and for the determination of the lateral margins in ALM. When dealing with intraepithelial melanocytes, the sensitivity was better with HMB-45, than with Mart-1. S-100 protein was the least sensitive. However, in invasive NAM, S-100 protein was the most sensitive and constituted the only positive marker in the case of desmoplastic melanoma and in areas with chondroid differentiation.

Fig1

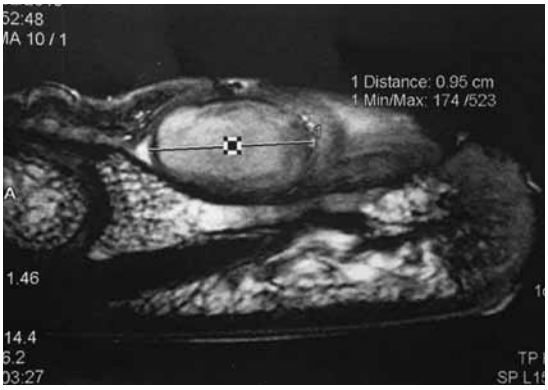

Fig2

Fig 1 & 2 - Deformation of the nail apparatus during one year with hypercurvature of the nail plate and lunula erythema. Subungual expanding process confirmed by MRI.

Fig3 - Third digit extremity, painful swelling of hyponychium and pulp, especially in cold temperature.

Fig4 - Glomus tumor shown distally (after gadolinium injection)

Sophie GOETTMANN

new tools in nail disorders

COMMMENTARY S. GOETTMANN

Much progress has been made in the diagnostic of nail pathology.

Medical imaging techniques have been developed for the nail. High resolution MRI carried out with an adapted coil has given very interesting results in the diagnosis and treatment of subungual nail tumours (Fig 1, 2).

However, this examination can only be performed in a few centres. MRI's done with standard coils have a poor resolution, which may, however, be sufficient in some cases. If the anatomic study of the lesion and its links with the surrounding tissue is less precise, the signal given out by the lesion and the potential contrast can be analysed and consequently suggest the type of lesion (Fig 3-7).

MRI is a costly tool and always financially accessible for patients. Ultrasound examination performed with machines of the latest generation is simpler and has a very good resolution. It can often replace MRI. New techniques, which are still under investigation, are promising. These imaging techniques enable diagnosis of a subungual tumour, a study of its anatomic links with the neighbouring tissue, and an indication of the nature of the tumour. If the diagnosis of a glomous tumour is clinical, high resolution MRI before operation may exceptionally reveal a second lesion. The tumour is localised precisely by probing, rendering surgery feasible without MRI. High resolution ultrasound, which is cheaper, is also able to confirm the absence of a satellite tumour.

Diagnosing onychomycosis is not always easy. In the most difficult cases, it is based on clinical, mycological and histological confrontation. Mycological samplings are not always properly performed, most laboratories are not specifically trained and false negative results are frequent. Cultures require from 5 to 6 weeks.

Using PCR on nail samples is an interesting technique as it provides quick answers and has high sensitivity. Thus, it is possible to identify the pathogen in a very small piece of nail or in a nail plate with very few fungi. This is not, as yet, a routine technique, but its standardisation could help a great deal in the diagnosis of onychomycosis.

Severity indexes of nail involvement and/or consequence of the nail disease have been described by several authors in order to quantify the importance of the clinical signs and their tolerability: the NailQol (nail quality of life) and the Naildex (Nail Dystrophy Severity Index), established for onychomycosis, could be used for other diseases. Baran & Hay had already proposed a Severity Index for onychomycosis in order to foresee the efficacy of treatments and, hence, adapt them to each type. The NAPSI (Nail Psoriasis Severity Index) allows the quantification of nail psoriasis severity.

Fig5 - Yellow pachyonychia of the big toenail with very progressive appearance associated with multiple splinter haemorrhages. Suspicion of onychomatricoma.

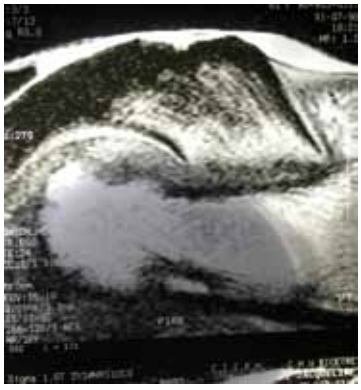

Fig6 - Digitations of the tumor are visible on MRI in transverse and sagittal sections.

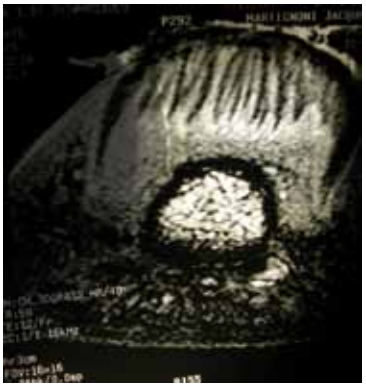

Fig7 - Digitations of the tumor are visible on MRI in transverse and sagittal sections.

Subungual and periungual congenital blue nævus

Gershtenson PC, Krunic A, Chen H, Konanaahalli M, Worobec S. Australas J Dermatol 2009;50:144-147

Only about 10 blue nævi have hitherto been described in the nail apparatus. The authors describe a 23-year-old Hispanic woman with a pigmented lesion on the right second toe present since birth, which had been slowly enlarging over the past years. A biopsy performed 10 years ago had been consistent with a blue nævus and it was suggested that the lesion be excised, but the parents declined. At the time of presentation, there was a 17 mm by 23 mm irregularly sized dark bluish plaque extending to the proximal and lateral nail folds, as well as to the nail bed and hyponychium. A new biopsy confirmed a cellular blue nævus. Because of the lesion's growth, removal was recommended and the nail organ was completely excised down to the bone. The defect was closed with a full-thickness skin graft. Histopathological examination again showed a blue nævus without a junctional component. Healing was uneventful without recurrent pigmentation and the function of the toe completely restored.

Blue nævi are proliferations of dendritic or rounder melanocytes in the dermis which are usually deeply pigmented and give rise to a bluish-black colour due to their location deep under the epidermis. Common blue nævi are round and usually not larger than 1 cm in diameter. Cellular blue nævi may be larger, sometimes irregularly shaped with a size of 1 to 3 cm. Combined blue nævi have a common nævus or junctional component. Histopathology does not allow differentiating congenital from acquired blue nævi.

The first blue nævus involving the nail unit was described by Kerl & Soyer in 1984 in a 4-year-old girl with a blue nævus extension into an inguinal lymph node. The authors list 9 more cases of blue nævi involving the nail unit. Another 3 cases of hallux nail and 5 with fingernail involvement of blue nævi have been described in literature. There was no sex predilection.

The most important differential diagnosis is ungual melanoma, which is notorious for its poor prognosis when diagnosed late. The clinical signs of enlargement, nail dystrophy, periungual extension have to be considered as ungula melanoma until otherwise proven.

COMMENTARY E HANEKE

The authors report a congenital blue nævus in a periungual and subungual location. Treatment was complete excision with full-thickness skin repair.

Blue nævi of the nail unit are indeed rare with about ten cases reported in literature. They should always prompt thorough work up to exclude an ungual melanoma. Complete excision is preferable to an incisional biopsy.

Melanonychia: the importance of dermoscopic examination and of nail matrix / nail bed observation

Perdiz de Jesus Bilemjian A, Pineiro-Maceira J, Baptista Barcaui C, Burnier Pereira F. Melanoníquia: importância da avaliação dermatoscópica e da observação da matriz / leito ungueal. An Bras Dermatol 2009; 84:185-189.

Melanonychia is the sign of a subungual melanoma in about two thirds to three quarters of cases. However, non-melanocytic conditions may also cause a dark stripe in the nail. Activation of benign melanocytes is seen in dark races, benign melanocytic hyperplasia is a sign of a lentigo or a melanocytic nævus (Fig 1) and malignant melanocytes give rise to melanoma. Early diagnosis of the latter is of utmost importance, as it is generally considered to have a poor prognosis. The authors describe two cases, one benign, one malignant.

A 13-year-old boy had a pigmented lesion on the right middle finger and, for 6 years, one on the right thumb. The latter was a 9 mm wide, almost black streak, the former was a light brown stripe of 1 mm width. Dermatoscopically, the melanonychia of the thumb was light brown and regular in its lateral portion, but centrally with a completely amorphous and irregular aspect and micro-Hutchinson sign of the proximal nail fold. This was suspicious enough to perform a biopsy, which showed melanoma in situ. This

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melanonychia: the importance of dermoscopic examination and of nail matrix / nail bed observation

prompted complete excision with 5 mm safety margins. The defect was left for second intention healing. The melanonychia of the middle finger was regular and no other treatment was performed.

A 63-year-old white woman presented with a light brown stripe of 6.5 to 7 mm width in the nail of the little left toe (Fig 2).

Mycological examinations were negative. Dermatoscopy showed a regular streaky pigmentation pattern. Even though this suggested a benign lesion, the patient's age, skin complexion, width of the melanonychia and presence on only one digit prompted the authors to perform an excision. Histopathology showed an increase in melanin pigment believed to be due to a benign melanocytic hyperplasia.

Melanonychias are due to a variety of different etiologies. The authors cite the ABCDEF rule for nail melanomas:

A: Age, Asian, African, Afro-american
B: Band wider than 3 mm, brown colour, black
C: Change of the streak
D: Digit involved: thumb, index, middle finger, big toe
E: Extension: Hutchinson's sign
F: Family and own history of melanoma and/or dysplastic nævus syndrome

In addition, the importance of dermatoscopy for the diagnosis is stressed. According to Stoltz, there are some patterns of nail plate pigmentation that are considered suspicious for ungual melanoma: loss of parallelism of the pigmented lines in the streak and Hutchinson's sign of the nail folds. In the second case, the ABCDEF rule could not clearly distinguish between benign and malignant. Removal of the nail plate may allow a better evaluation of the extent of the pigment lesion of the matrix and nail bed. Also the histopathology of nail pigmentations presents some peculiarities of which the pathologist should be aware.

Fig1 - Regular melanotic band in a 16-year-old patient due to a melanocytic nævus of the matrix.

Fig2 - Frictional melanonychia of the double little toenail of a 63-year-old woman.

Fig3a - Almost total acquired melanonychia in an 83-year-old man

Fig3b - The nail apparatus was completely removed and the defect repaired with a full-thickness skin graft

COMMENTARY E HANEKE

Two cases of melanonychia are described. The young boy turned out to have melanoma in situ whereas the elderly woman had a benign melanonychia.

In this article, the clinical picture in case one is indeed worrying and the histopathology shows an in situ melanoma. We are glad to see that the authors deemed local excision of the lesion necessary with a sufficient safety margin and did not amputate the thumb (Figs 3 a,b).

The clinical photograph of the second shows a lesion strongly reminiscent of friction melanonychia. Histology showed hyperpigmentation and no increase in melanocytes, thus no hint of malignancy.

A rare ischemic complication of ingrown nail surgery in a child

Rueff N, Gapany C. Dermatol Surg 2010; 36:250-252.

Ingrown toenails are one of the most frequent nail conditions in schoolchildren and adolescents. They may considerably interfere with daily activities, in particular with sport. Whereas conservative treatment with packing, taping, gutter splint and artificial nails may be successful in the early stages when performed consistently, most patients and/or their parents request a rapid fix. A plethora of different surgical methods has been described over the last 125 years, most of which are radical if not mutilating, and still have a very high recurrence rate. Among the best known and still frequently performed methods are wedge excisions named after either Emmet, Emmert or Kocher.

The authors report the case of a 10-year-old boy who had undergone Emmert's wedge excision of the hallux for an ingrown nail. The surgery was performed in a local general hospital under local anesthesia with 1% lidocaine without adrenaline. Both sides of the nail were removed along with the granulation tissue and the matrix was curetted away. The tourniquet was removed at the end of the operation and an antibiotic was prescribed. Because of immediate intense postoperative pain and persistent sanguinolent oozing, the dressing had to be changed daily. An elastic tape was added at day 3 postop in order to reduce the bleeding. The boy experienced intense aching in the evening which slowly turned into numbness of the hallux. Blisters developed on the dorsum of the big toe at day 7 and the stitches were removed. Two weeks after surgery there was a foul smell and the toe showed a humid necrosis. This led to referral of the boy to the authors.

A surgical debridement was performed leading to loss of the distal phalanx and articular cartilage of the proximal phalanx along with the soft tissue. Bacterial culture grew Staphylococcus aureus. A plantar flap of skin survived and was used to close the defect. The stump healed without further complications. The boy never ran a temperature during the whole period.
In their discussion, the authors stress that ingrown nail surgery should relieve pain, be inexpensive and safe and allow fast return to normal activities. A recent review by Yang et al. 2008 cited recurrence rates in children of 12 – 37%, infections in 8% and osteomyelitis in 1– 2%. These complication rates vary according to the technique used (Rounding & Bloomfeld 2003 [Cochrane Database Syst Rev CD 001541]). Conservative treatments include antiseptic soaks, packing, taping, gutter treatment, dental strings or similar and combined techniques. However, they require repeated visits.

In this patient, no infectious cellulitis could be confirmed at the time of the surgical debridement. The Staph aureus grown in culture was susceptible to the antibiotics prescribed. Therefore, ischemia was thought to be the most plausible cause of the catastrophic outcome in this young boy. The local anesthesia had been without epinephrine. The tourniquet had been removed at the end of surgery. The authors conclude their report with the notion that there is no such thing as small surgery, that all measures to avoid complications have to be taken, and uncommon complications have to be dealt with immediately.

Eckart HANEKE

a rare ischemic complication of ingrown nail surgery in a child

COMMENTARY E HANEKE

This is certainly a very rare happening, as there is no other report in literature of toe necrosis after ingrown nail surgery in such a young boy.

However, this also requires an additional comment: why do surgeons still perform Emmert's wedge excision, or as it is called in Switzerland, Kocher's ingrown nail operation? This is a big operation for a small part of the body and has a very high rate of recurrence and of complications (Fig 1-3). Furthermore, the postoperative results are often aesthetically catastrophic. It is correct to note that conservative treatment is time-consuming (Fig 4-5), but it leaves the toe intact, and when performed by an experienced dermatologist has an excellent success rate. Even the more advanced cases of ingrown toenails with abundant granulation tissue are amenable to a much less invasive surgery which does not result in the mutilation of the toe: selective matrix horn resection or cautery, either with liquefied phenol or 10% sodium hydroxide. Although a questionnaire answered by Swiss surgeons indicated that Kocher's operation is the method they prefer – that does not prove that this inadequate technique is good.

Fig1 - Big toe of a 16-year-old girl after medial and lateral wedge excision for an ingrown toenail. Note the lack of lateral nail walls, scarring and irregular wavy nail plate, as well as digging in of the two distal nail plate margins.

Fig2 - Left big toe of the same patient with marked recurrence and granulation tissue. The black stain of the nail is from application of a silver nitrate solution in a futile attempt to cauterize the granulation tissue.

Fig3 - Left big toenail of a 43-year-old North African women 25 years after lateral and medial wedge excision for an ingrown toenail.

Fig4 - Right big toenail with ingrown nail. Note the nail is very wide and curved in medially.

Fig5 - Two strips of an elastic tape (Elastoplast® Nichiban, Japan), are applied: the first is placed in such a way as to pull the distal end of the medial groove plantarly, the second is placed 90° to it, both to anchor the first tape and also to exert even more pull. Note that the margin of the tape is placed under the distal-medial corner of the nail plate, lifting it slightly up and keeping it away from the soft tissue.

Chemical matricectomy with 10% sodium hydroxide for the treatment of ingrown toenails in people with diabetes

Tatlican S, Eren C, Yamangoktürk B, Eskioglu, F, Bostanci S. Dermatol Surg 2010;36:250-252.

Ingrown toenails may be a serious nail condition in schoolchildren and adolescents. Surgery is commonly performed in stages 2 and 3. Ingrown toenails are also very frequent in diabetic patients and may present with more problems in this category.
The authors claim that people with diabetes cannot tolerate chemical burns that occur after cauterization of the germinal matrix. Theoretically, this is because delayed wound healing causes infections and postoperative complications, although phenol-alcohol matricectomy has been used successfully for the treatment of ingrown toenails in people with diabetes.

Since chemical matricectomy with sodium hydroxide has been used effectively for the treatment of ingrown toenails in a normal population, and found to be as effective as phenol-alcohol matricectomy, with fewer postoperative complications and faster healing times, the authors investigated the efficacy and the safety of 10% sodium hydroxide for the treatment of ingrown toenails in people with and without diabetes,.

Thirty patients with diabetes and thirty without, presenting a total of 81 ingrown toenails at Stage 2 or 3 were enrolled in the authors' study (Table 1). The patients with diabetes received consultation from the neurology and cardiovascular surgery departments to investigate any neurological, vascular, or ischemic complications related to the diabetes. None of the patients had hematological disorders, previous history of allergic reactions to local anesthetics, apparent vascular disorders, or peripheral neuropathic disorders. Preoperative oral antibiotics and topical antiseptics were prescribed if any sign of infection was detected.

The surgical area was cleaned using a povidone-iodine solution, ring block digital anesthesia was provided using 2mL of 1% lidocaine without epinephrine, and a tourniquet was applied. The affected nail edge was removed without leaving any nail spicules in the surgical area after the nail plate was cut longitudinally. Before the application of sodium hydroxide, the germinal matrix, the nail plate, and the granulation tissue were curetted gently and superficially with a sterile metal curette to remove tissue remnants. The surrounding skin was protected from contact with chemicals using bacitracin ointment. After a dry surgical area was achieved, chemical cauterization was performed by applying 10% sodium hydroxide solution by rotational movements of a sterile cotton-tipped applicator for one minute. Residual sodium hydroxide was immediately neutralized with 10% acetic acid lavage. The operation was completed with the application of topical antibiotics and non-occlusive gauze dressings after removal of the tourniquet. Patients were instructed to keep the foot raised and take an analgesic if needed. Daily application of bacitracin ointment was prescribed until complete healing, which was defined as an end of oozing and complete reepithelialization.

The surgical area was checked for the presence of drainage, tissue damage, infection, and pain on the 10th, 16th, 23rd, and 30th days. For long-term follow-up, patients were examined on the 3rd, 6th, 12th, 18th, and 24th month visits for the presence of any long-term complications or recurrences. Spicule formation or any sign related to re-ingrowth of the operated nail was accepted as recurrence.
Comparison of complete healing time, mean duration of pain, drainage, and tissue damage in patients with and without diabetes did not reveal any significant difference.

Eckart HANEKE

Delayed wound healing, wound infections, and digital ischemia make the treatment of ingrown toenails in patients with diabetes more difficult than in non-diabetics. The authors prefer sodium hydroxide chemical treatment to phenol, as they believe that the latter may cause uncontrolled tissue damage, whereas the former can easily be neutralized with acetic acid.
This makes the concentration of the sodium hydroxide and the contact time the only variant of the procedure, whereas phenol may have a prolonged action.

COMMENTARY E HANEKE

In previous articles, the senior author's group had reported on their experience with sodium hydroxide chemical matrix cautery for the treatment of ingrown nails. They had seen better results in terms of faster healing, fewer recurrences and complications. Whether or not this is true remains to be seen, although the authors have just published another short manuscript directly comparing phenol and sodium hydroxide cautery concluding that sodium hydroxide is better. This is not our experience, as we have never seen the complications with phenol these authors mention (Fig 1-4).

COMMENTAIRE R. BARAN

Neutralization of the sodium hydroxide with acetic acid does not guarantee additional safety compared to phenol. In fact, this is neutralized by the alcohol and ... the blood !

Table 1 : Patient data

	With diabetes	Without diabetes	p value
Female/male, *n (%)*	14/16 (46.7/53.3)	14/16 (46.7/53.3)	>4.99
Age, mean SD	31.8±10.7	32.6±8.7	0.77
Duration of disease, months, mean 7 SD	6.57+-2.7	5.7±2.7	0.24
Nails, *n (%)*	40 (49.4)	41 (50.6)	0.91
Stage 2, *n (%)*	17 (47.2)	19 (52.8)	0.72
Stage 3, *n (%)*	23 (51.1)	22 (48.9)	0.86
Glucose, mg/dL, mean 7 SD	201.0±18.7	89.9 ±7.8	0.00
SD: standard deviation			

Fig1 - Painful ingrown big toenail in a 13-year-old football player.

Fig2 - The lateral proximal nail corner is elevated to show the true extent of the nail.

chemical matricectomy with 10% sodium hydroxide for the treatment of ingrown toenails in people with diabetes

Fig3 - The lateral margins of the nail were cut and avulsed and the matrix horns cauterised with liquefied phenol.

Fig4 - A normal nail regrows 6 weeks after surgery. Pain or inflammation disappeared.

Fingertip-nail bed injuries in children: current concepts and controversies of treatment

Gellman H. J Craniofac Surg. Jul;20(4):1033-5.PMID: 19553859
PubMed-indexed for MEDLINE

Crush injuries are the most frequent fingertip injuries in children. They often involve a fracture of the distal phalanx, but may also cause soft tissue damage only, and/or partial or total fingertip amputation with or without loss of the nail. The result is often a functionally and aesthetically impaired fingertip.
Whether the nail has to be removed to allow nail bed repair after a crush injury remains a matter of dispute, and is often based on opinion and personal preference. Whereas some authors recommend nail avulsion in cases of subungual haematomas occupying more than 25% of the nail, others opt for trephination and suction of the haematoma, thus avoiding additional trauma to the nail bed. An adequate treatment of the pain enables the nail bed to heal.

The authors claim that the entire matrix and nail bed "allow for the nail growth and migration". Longitudinal nail growth takes 70 to 160 days to reach its full length. After a trauma, nail growth can be arrested for up to 21 days and is then rapid for the next 50 days until it slows down again to the normal growth rate. These relative accelerations and slow-downs in nail growth cause the characteristic lump of a regrowing nail.

The examination of an injured fingertip can often be performed without anesthesia although a digital block may be necessary in some cases. Before anesthesia, an examination of the sensory function is essential even though this may be difficult or impossible in very small children. Motor function and vascularity are checked. If the nail is avulsed or unstable in the nail fold, examination also requires block anesthesia. Attention should be paid to the following: devascularized and macerated skin, active bleeding, subungual hematoma, avulsion of the nail, disruption of the nail bed and matrix, the pattern of laceration, posture of the finger, deformities that might indicate a fracture, dislocation or a tendon injury, and the presence of foreign material such as glass, wood, metal or soil.
Radiologic examination includes anteroposterior, lateral and oblique views as up to 50% of these injuries include a fracture, often a comminute tuft fracture.

As the nail enhances the ability to grasp tiny objects, increases tactile sensation and plays an important role in the regulation of peripheral blood circulation, it is mandatory for all physicians to have the knowledge and

Eckart HANEKE

current concepts and controversies in treatment

ability to care for nail bed injuries. Most of these accidents involve a blunt trauma leading to nail bed laceration. A post-traumatic nail deformation is likely to occur when a scar forms in the nail bed. Injury of the matrix may result in a split, involving both the matrix and overlying proximal nail fold in a pterygium, and the nail bed in onycholysis. Whereas it had been recommended to correctly repair any potentially lacerated nail bed in the case of a subungual hematoma in more than 25% of the nail, this has been debated recently. Simon & Wolgin showed that in 60% of the cases with hematomas >60% had lacerations in need of repair, and this rose to 95% if there was a fracture. In contrast, Seaberg et al questioned the need of nail avulsion if the nail and nail border were still intact. They found that, regardless of whether there was a hematoma >50% (55 patients) or a fracture (30 patients), all were treated with trephination and there was no nail deformity after 10 months. Chudnofsky & Sebastian agreed with simple trephination, but recommended radiography in order to rule out bone dislocation. Proper bone alignment and stability are essential for bone growth in children. In an earlier study, Roser & Gellman had compared the results of formal reconstruction of the nail bed in hematomas >25% with simple trephination and found the latter to be better. The average cost for surgical repair was $1263 and for the conservative treatment $283.
Regardless of which treatment approach is chosen, the possibility of scarring, loss or obliteration of the nail fold, destruction of the nail with lack of regrowth, and infections has to be explained to the patient, and/or his parents. The patient should also be informed about how long it takes for a new nail to grow.

Fig1 - Ring and little fingers of a 23-year-old man burnt by a warming lamp a few hours after birth, dorsal view.

COMMENTARY E. HANEKE

The author refers to an article that he co-authored in 1999. The results are interesting and contradict what had been thought previously, namely that large subungual hematomas always require formal nail matrix and bed repair. This is certainly good news, especially for the public health care system, as to observe or simply trephine the hematoma costs 75% less. However, the patient and parents' reaction is uncertain in case of complication or cosmetic impairment (Fig 1-2).

Fig2 - Same patient, volar view.

Eckart HANEKE

Human papillomavirus type 16 detected in four periungual squamous cell carcinomas from the same patient

Ia Placa M, Venturoli S, Dika E, Saccaroli E, Rech G, Fanti PA. G Ital Dermatol Venereol 2009:144:212-213.

Human papillomavirus (HPV) has been shown to play an etiological role in cervical cancer, anogenital carcinomas and a subset of head and neck cancers. The presence of high-risk HPV in periungual carcinomas is seen as hinting at possible autoinoculation from the anogenital area.

The authors present a 52-year-old Italian woman who developed four periungual squamous cell carcinomas (SCCs) over a period of 8 years. HPV 16 was detected in all lesions using two polymerase chain reactions - enzyme - linked immunosorbent assay methods. The first periungual cancer developed on the left thumb in 1999, the second on the left little finger in 2003, the third on the right index finger in 2004 and the fourth on the right thumb. The distal phalanx of the left thumb was amputated, the next two lesions were locally excised and the defects repaired with split thickness skin grafts. At the time of diagnosis of the fourth cancer, there was no sign of any HPV infection, and the patient was not aware of any HPV lesions in her history. Histopathology of the fourth lesion revealed a poorly differentiated squamous cell carcinoma of bowenoid type. The lesions were completely excised, and the wound healed without complication and without recurrence until the time of writing the manuscript.

The PCR-Elisa assays consistently revealed HPV 16 using MY and GC primers. As HPV 16 has only been found in genitoanal skin and the periungual region, the authors assume that veneral transmission via inoculation of HPV particle is the most likely mechanism of infection. The long time lapse between the different SCCs suggests that a latent infection of high-risk HPV puts patients at risk of developing HPV-associated cancers over a long period of time.

Eckart HANEKE

human papillomavirus type 16 detected in four periungual squamous cell carcinomas from the same patient

COMMENTARY E. HANEKE

The authors conclude their manuscript with the statement that SCCs of the nail unit must be seen as HPV-linked, especially in cases of multiple ungual SCCs.

Though this is true for a subset of ungual SCCs, this is a rather bold statement in our opinion. We have seen a young Brazilian woman with extensive periungual squamous cells carcinomas and Bowen's disease not only on fingers, but also on toes, and in the web space of toes (Fig 1-3). Even though one may speculate that inoculation of HPV is also possible at any other body site with the fingers being the vector, this is not very likely as there should then be more cases of HPV 16-induced SCCs elsewhere on the body. As long as not all SCCs of the skin are tested for HPV - both high-risk and undefined risk - any statement should be made with some reserve.

Fig2 - Pigmented Bowen's disease of the tip of the finger including the entire nail organ.

Fig1 - Invasive squamous cell carcinoma of the thumbnail region.

Fig3 - Bowen's disease on two web spaces and one toenail.

Mario LECHA

Linear scleroderma with partial anonychia

Singh S, Kumar S. Indian J Dermatol Venereol Leprol 2009; 75: 623-25

The morphea variant described as "Linear scleroderma" occurs frequently in children. Most commonly affected are the limbs and face. When considering all variants of morphea, differences are seen in frequency rates of the morphologic variants. The authors of this Letter to the Editor, refer to a study by Marzano AV et al. including 239 patients with morphea. Of those 239 patients, 126 were children, 22 of them presenting with linear scleroderma. In those patients with limb involvement no nail disease was observed. Thus, the authors describe a never previously reported case where partial anonychia was observed.

COMMENTARY M. LECHA

It appears that this may be a first observation of nail alteration in this form of linear morphea. In the case presented, alteration of the nail plate of the 4th finger included in the area of the sclerodermic lesion can be seen. To be precise there was partial anonychia with a remnant of nail and no cuticle. A biopsy was performed, which showed peri-appendageal inflammatory infiltration with lymphocytes and histiocytes, together with occasional plasma cells. There was also thickening of the collagen bundles in the papillar and reticular dermis.

It should be emphasized that no Raynaud's phenomenon or systemic complaints were present, nor was there any relevant data in laboratory examinations.

The authors conclude that this case demonstrates, for the first time, that linear scleroderma may cause nail alterations (anonychia), and that scleroderma (linear morphea) should to be added to other causes of acquired anonychia such as trauma and lichen planus.

Nail alterations in connective tissue diseases may be an interesting feature. In commenting on the present article, we have summarised information related to every disease in this group as reported by SE Tunc et al. based on a survey of one-hundred and ninety patients. Nail related changes in fingernails include: erythema of the proximal nailfold, splinter haemorrhages, red lunula, longitudinal ridging, capillary loops in proximal nailfold. Thin nail plates, periungual erythema, increase in longitudinal or transverse curvature and dull white coloration. The frequency of changes is varies.

Clinical correlations are variable. For example, in active systemic sclerosis 54,5% of patients showed an increase in transverse curvature of fingernails and capillary loops and splinter haemorrhages were also frequent. In SLE 39,3% of patients with active disease showed splinter haemorrhages in fingernails. In Dermatomyositis splinter haemorrhages and capillary loops were also frequent. Red lunula may be found in patients with SLE and Dermatomyositis and, for the first time, SE Tunc et al. report the presence of red lunula in primary Sjögren syndrome. All these findings allow us to conclude that nail changes are frequent in connective tissue diseases and patients should be examined with regard to these alterations. It appears obvious that fingernails are more frequently affected than toenails.

Mario LECHA

Development of a compact electron spin resonance system for measuring ESR signals of irradiated fingernails

Suzuki H, Tamukai K, Yoshida N, Ohya H, Katsuhisa K, Anzai K, Swartz HM. Health Phys. 2010; 98:318-21

This article explains the usefulness of electron spin resonance (ESR)-based dosimetry as a measurement of radiation exposure of fingernails. The aim of the study was to demonstrate the improved functionality and sensitivity of the new device: a lightweight one box device with a higher Q-factor without influence of magnetic modulation, and containing a fingernail positioner. Another aim was to show improvements in measuring sensitivity and functionality in ESR signals from radiation-exposed fingernails.

COMMENTARY M. LECHA

The newly-developed portable electron spin resonance instrument ESR-X-10SB appears to be a useful instrument. Practical use allows on-site measurements. It improves the performance of previous devices such as ESR X-10A and allows detection of lower dose levels of exposure between 0,04 - 1.0 Gy. However, the readings at these levels were not absolutely reliable. The authors indicate that, in spite of the high sensitivity of the system, there is still a risk of possible interference e.g. from mechanically-induced signals (MIS) and radicals formed by clipping the nails for sample collection. In any case, measurements of radiation exposure in nails are always more accurate than in those carried out with hair. Radiation induced radicals are mainly formed from keratin which is present in high quantity in both nails and hair, but in hair the presence of melanin may produce a broad and intense electron spin resonance (ESR) signal which can obscure radiation-induced signals (RIS).
Fingernails appear to be a potentially interesting substrate for dosimetry of radiation exposure predicting levels as low as 1 Gy or even lower.
Moreover, this article appears to be interesting for the development of an easy and reliable measurement of ionizing radiation exposure. If we look at it from globally, these techniques could be very valuable, in screening ionizing radiation exposures when evaluating the risk of workers in specific industrial settings (nuclear plants, medical professions , radiation therapy), but also for military and civilians in conflict areas.

It should be remembered that ionizing radiation generates free radicals in nails as well as in other keratin rich structures. We are able to detect radiation-induced signals (RIS), as well as mechanical induced signals (MIS). From this article it appears that these two determinations may interfere with one another. The article's main interest is to provide complete understanding of the roles of RIS and MIS in nails, enabling us to clearly separate both signals. To establish ionizing radiation exposures and real risk levels, it is necessary to quantify RIS without MIS contamination and evaluate RIS separately,

Mario LECHA

Tensile and shear properties of fingernails as a function of a changing humidity environment

Farran F, Ennos AR,. Starkie M, Eichhorn S.J. J Biomech 2009. 42:1230-1235

The authors of this article emphasize the importance of the mechanical properties of the nail, taking into account its structure and function. Understanding the mechanical behaviour of the nail plate, especially that of the fingernails, will enable us to protect them and to keep them in their best functional condition.
A series of tensional and torsional tests were performed with different moisture contents and in a cyclical sequence. Basically, plasticity of the nail increases with greater moisture.

COMMENTARY M. LECHA

This article includes a basic technical study about the relationship of the structure-mechanical properties of the fingernails, and appears to be the first attempt to relate them to environmental moisture conditions. The first point to note is that the nail is located on a moist living tissue - the nail bed. From an anatomical point of view, the intermediate layer is the thickest of the three layers of the nail structure and plays a major role in mechanical nail properties. On the other hand, as far as is known, the flexions required to break a fingernail increase with the duration of immersion in water. To obtain reliable results, the authors studied the behaviour of fingernails in different conditions of humidity and with different technical devices.
The preparation of the nail material for testing appears to be a complex procedure with samples, which must be at least 3mm wide and 9 mm long, transferred into controlled humidity environments.
The results of the tests performed indicate that 55% relative humidity is optimal for fingernails to be flexible and resistant to bending. Above this level it is easier to damage them by torsion due to changes in the mechanical properties of the matrix material. At low humidity levels nails are more brittle. It is worth mentioning that according to the cutting tests, also performed and published separately (Farran et al. 2008), nails are laterally toughest at 55% relative humidity.
This article reminds us of the importance and the characteristics of the mechanical design of human fingernails, which is not usually discussed. The nail is structured in three layers. The dorsal layer is a narrow layer composed of hard keratin. The intermediate layer is a moderately hard keratin and the ventral layer in contact with the nail bed is composed of soft keratin. The hyponychium is part of that layer.
It is basic knowledge to correlate this structure to the mechanical performance of nails which enables them to function, protecting the soft terminal part of the fingers by producing resistance to upward bending of the distal phalange pad. This appears to be the main function of the dorsal and ventral layers. On the other hand, stiffness of the nail is related to the intermediate layer. The conclusion is that fingernails are extremely sophisticated structures.

Mario LECHA

The truth about toenail fungus

Zachary L. Chandler, D.P.M. The Johns Hopkins Med Lett Health After 50. 2009; 20: 3

This text summarizes the main facts about toenail onychomycosis. It includes the basic information that every patient should know. The first statement in the introduction is that onychomycosis is a common condition of the toenail anatomical structure which results from fungal infection of the nail bed.
Patients may suspect that they have this disease by checking that the nail is discoloured, thickened and brittle. Although it appears not to be a severe condition, treatment should be prescribed by a physician.

There are different forms of treatment which take into account the severity of infection, and a detailed prescription should be given to patients. An important warning is included: after the treatment, the affected nail should be screened for one year, in order to be certain that it is fungus free.

In some cases patients can never be cured and this means that regular medical consultation is necessary and removal of the whole nail may even be considered
It is clear that fungus needs a specific warm wet atmosphere to develop, so that, keeping nails clean, dry and short will prevent infection.

Finally this text emphasizes the fact that toenail onychomycosis may be more of a nuisance than a health problem, except for those patients with diabetes or vascular disorders.

COMMENTARY M. LECHA

This text written by Zachary L. Chandler, D.P.M. from the Department of Orthopaedic Surgery at Johns Hopkins, is a suitable pamphlet for patients' information regarding the diagnosis, management and follow up of toenail onychomycosis. It contains, in a summarised form, all the main information the patients should be aware of regarding this fungal infection which is fairly common, especially in the elderly.

It is worth remembering that onychomycosis is the most common toenail condition. It may be caused by dermatophytes, yeast and non-dermatophyte fungi.
It should be remembered that independently of the causing agent there are contributing factors which encourage this nail infection, e.g. high humidity and footwear occlusion, nail trauma or genetic predisposition. On the other hand, concurrent diseases such as diabetes, compromised peripheral circulation and any form of immune-suppression may favour the appearance of onychomycosis.
Regarding causative fungi, onychomycosis is usually caused by dermatophyte, but *Scopulariopsis and Scytalidium* moulds should also be considered. Recently a case of Malassezia onychomycosis has even been described.
Although the classical laboratory procedures, KOH direct examination plus culture, are still a mainstay for diagnostic confirmation, we should be aware of the introduction of new techniques, such as molecular genetic tools, and PCR and RFLP analysis are used. These techniques are especially indicated in the case of recurrent infection to establish the possibility of different fungal strains causing infections. In any case, there is a certain controversy in the use of these new techniques due their cost compared to classical procedures. The use of these new techniques should be based on the patients' specific factors, e.g. immune-suppression or other factors that would compromise results. Whatever the case, the diagnostic has to be confirmed before the start of treatment, in order to choose the most appropriate drugs and establish the causative agent, the necessary treatment and the duration in regard to patients' characteristics, age, co-morbidities and interactions with other treatments, drug side-effects / interactions and cost. Other factors to be taken into consideration are the use of new antifungal drugs, e. g. new azoles and the topical emerging therapies using physical and chemical enhancers to optimize drug penetration and persistence in the affected nail. Photodynamic therapy is also being evaluated. All these techniques are under study in different trial phases.

Bianca Maria PIRACCINI

Occupational allergic contact dermatitis to hydroxyethyl methacrylate (2-hema) in a manicurist

Andersen SL, Rastogi SC, Andersen KE. Contact Dermatitis. 2009; 61: 48-50.

This article reports the case of a 35-year-old woman who developed vesicular periungual acute allergic contact dermatitis one day after the application of artificial nails. The history revealed that the patient had suffered from a transient pruritic rash on the arms after application of hair extensions, and had given up work as a manicurist applying artificial nails after she had developed vesicular dermatitis on her arms and fingers.
Patch testing revealed positive reactions to benzoyl peroxide and to hydroxyethyl metacrylate (2-HEMA) at D7. While benzoyl peroxide was listed on the label of the nail products, 2-HEMA was not. Gas chromatography-mass-spectrometry (GC-MS) of the nail products showed that 2-HEMA was present in several of them, even if it was not mentioned in the list of ingredients.

Fig1 - Eczema of the fingertip of the thumb and mild onycholysis of the first two fingernails in a manicurist sensitized to acrylates.

COMMENTARY BM. PIRACCINI

This article raises two important points: the frequency of acrylate allergy in women working with or wearing artificial nails, and the lack of proper ingredient labeling of many nail products, despite recent laws.
Acrylate allergy is common, and fairly typical of some working categories, such as dentists and dental technicians, workers in the paint industry and professional beauticians. Professional sensitization induces localized or diffuse eczema and individual risks of allergic reactions when carrying out other procedures involving acrylates.
Allergic reactions to acrylates contained in artificial nails is usually due to hydroxyethyl metacrylate (2-HEMA) and localized on the fingertips, with acute or chronic eczema and onycholysis (Fig 1) (J Eur Acad Dermatol Venereol 2007: 21: 169–174). Subjective symptoms include itching, pain and paresthesias. In professional beauticians this dermatitis typically involves the first 3 digits of both hands. Paronychia with nail plate abnormalities and involvement of the skin of the hands may be associated. Avoiding contact with acrylates induces slow remission of symptoms and is mandatory to avoid recurrences. Since acrylates are contained in dental materials, acute severe contact stomatitis due to acrylates can occur in patients previously sensitized to artificial nail material.
Avoidance is not always possible, since, especially in the nail beauty field, many products are marketed with absent or incomplete ingredient labeling.

Bianca Maria PIRACCINI

A pilot respiratory health assessment of nail technicians: symptoms, lung function, and airway inflammation

Reutman SR, Rohs AM, Clark JC, Johnson BC, Sammons DL, Toennis CA, Robertson SA, MacKenzie BA, Lockey JE. Am J Ind Med. 2009; 52: 868-75.

This study was carried out to evaluate whether nail technicians who apply artificial nails (Fig 1) are at risk of developing respiratory symptoms and asthma. Respiratory assessment (spirometry, exhaled nitric oxide (ENO) measurement - as a sign of airway inflammation - and urine sampling for cotinine) was carried out on a group of 40 nail technicians who regularly applied artificial nails ("acrylic group"), a group of 10 nail technicians who did not ("non-acrylic group"), and 31 control students.
The study showed that nail technicians working with acrylates had the worst pulmonary function tests and more respiratory tract inflammation symptoms than either technicians not using acrylates or the control group. Nail technicians working with acrylates also reported more wheezing, as well as cold and eye irritation, than the control group. Respiratory symptoms were worst in technicians who had been working for longer than four years and in those who were in contact with acrylate liquid or gel for more than 3 hours per day. Smoking increased the inflammatory symptoms.

COMMENTARY BM. PIRACCINI

This study is very important, since it clearly demonstrates the risk of respiratory tract damage due to acrylate exposure, when working as an artificial nail technician. The fact that the study included some non English-speaking nail technicians (Asian and Afro-Americans), who often work in nail salons with safety measures, suggests that the results could be even worse, as they may not have correctly understood the questionnaire.
Acrylates constitute a considerable hazard for several working categories, especially dental personnel, nail technicians working with artificial nails, and these should be included in the risk group. An effective way to reduce their exposure risk should also be investigated.

Fig1 - Acrylic nails
(Courtesy of Bertrand Richert, Belgium).

Bianca Maria PIRACCINI

Coxsackievirus A6 and hand, foot, and mouth disease

Osterback R, Vuorinen T, Linna M, Susi P, Hyypiä T, Waris M. Emerg Infect Dis. 2009; 15: 1485-8. Finland

Hand, foot, and mouth disease (HFMD) is a well known childhood viral infection caused by Enterovirus, with outbreaks usually brought on by coxsackievirus A16 (CVA16) or enterovirus 71.
In Finland, during the fall of 2008, there was an outbreak of HFMD involving 43 children: PCR study from acute-phase specimens revealed coxsackievirus A6 (CVA6), an unusual enterovirus type in all of them. The children were all suffering from CVA6-induced HFMD and also presented onychomadesis of the fingernails and/or toenails within 1-2 months after the HFMD outbreak. PCR was carried out from 2 shed nails of 2 patients and the CVA6 virus was identified in one of them.

COMMENTARY BM. PIRACCINI

The term "onychomadesis" describes the detachment of the nail plate from the proximal nail fold, and is due to a severe insult which produces a complete arrest of nail matrix activity. Clinically, onychomadesis appears as a sulcus replacing the proximal nail plate and moving distally with nail growth.
In children, onychomadesis is often seen in a fingernail, as a consequence of an episode of acute paronychia (Fig 1), or in the great toenails affected by congenital malalignment. Onychomadesis of several fingernails and/or toenails in children has been associated with HFMD (Fig 2) and has also been reported after Kawasaki syndrome (CMAJ. 2002 16; 166: 1069) or after intake of valproic acid (Pediatr Dermatol. 2009; 26: 749-50).
It is possible to speculate that only certain strains of coxsackievirus may induce onychomadesis after HFMD. In fact, in the nationwide outbreak of HFMD in Finland during the autumn 2008, characteristically involving a number of children and followed by onychomadesis, CVA6 and CV-A10 were identified as causative agents (J Clin Virol. 2010; 48: 49-54). Another two outbreaks of HFMD in Spain were followed by onychomadesis: in Valencia (213 cases in June 2008) (Euro Surveill. 2008 Jul 3; 13(27), pii: 18917, Bol Epidemiol Sem. 2008; 16: 61-4) and in Valladolid, a small city 500 Km from Valencia (16 cases from November 2008 to February 2009) (An Pediatr (Barc). 2009; 71: 436-9). Unfortunately, PCR was not carried out in the Spanish cases. However, this does not exclude the possibility that the enterovirus A species CVA6 was the responsible agent.

Fig1 - Onychomadesis of one fingernail after an episode of acute paronychia.

Fig2 - Onychomadesis of several fingernails after HFMD.

Bianca Maria PIRACCINI

Onychomycosis insensitive to systemic terbinafine and azole treatments reveals non-dermatophyte moulds as infectious agents

Baudraz-Rosselet F, Ruffieux C, Lurati M, Bontems O, Monod M. Dermatology. 2010; 220: 164-8.

The article reports eight cases of otherwise healthy adult patients, all suffering from clinically diagnosed onychomycosis of the great toenail, which did not improve after several cycles of systemic treatments with terbinafine, itraconazole and fluconazole. After a further failure of treatment response, mycology (KOH and cultures) and PCR/RFLP assay were carried out and revealed that non-dermatophytes were present in the nails.

COMMENTARY BM. PIRACCINI

This article proves that mycology with identification of the fungus responsible for the onychomycosis is mandatory before starting treatment, for two main reasons:

1- Not all onychodystrophies clinically resembling onychomycosis are fungal infections, as traumatic onycholysis and toenail psoriasis (Fig 1) can often mimic onychomycosis.

2- At least 15% of onychomycoses are caused by non-dermatophyte molds, including *Fusarium* sp., *Scopulariopsis brevicaulis*, *Aspergillus* sp. and *Acremonium* sp. (J Am Acad Dermatol 2000; 42: 217–224), which usually respond poorly to conventional systemic antifungals.

Starting a treatment with systemic antifungals without mycological confirmation of the diagnosis and identification of the causative fungus may, therefore, lead to improper administration of drugs to patients affected by onychodystrophies of non-mycotic origin, or to administration of antifungals to resistant fungi. In both cases the patient receives an improper treatment and the public health system pays for expensive drugs that are not needed.

Unfortunately, as confirmed by a recent study carried out in France, in 53% of cases dermatologists do not perform any mycological sampling before treating onychomycosis (Ann Dermatol Venereol. 2008; 135: 561-6).

Fig 1 - Psoriasis of the toenails mimicking onychomycosis: the differential diagnosis is not possible without mycology.

Bianca Maria PIRACCINI

Selenium and risk of bladder cancer : a population-based case-control study

Wallace K, Kelsey KT, Schned A, Morris JS, Andrew AS, Karagas MR. Cancer Prev Res (Phila Pa). 2009; 2(1): 70-3.

Selenium is a dietary constituent with a possible protective effect against several types of malignancies, including bladder cancer. Several studies have shown that high serum and toenail selenium levels are related to a significantly reduced risk of invasive bladder cancer. This large-scale case-control study (1108 controls) investigated the association of selenium concentration in the toenails with the incidence of bladder cancer in a population of 767 patients, aged 25 to 74, diagnosed with bladder cancer from July 1, 1994 through December 31, 2001 in New Hampshire (USA). Study participants underwent an interview and provided a toenail sample. Selenium levels in the toenail were measured and related to the presence of bladder cancer, its severity and the sex and smoking habits of the patient.

The results showed no association between high toenail selenium levels and the low risk of bladder cancer. High levels of selenium seem to have an effective protective action against bladder cancer in low to moderate smokers, while in heavy smokers they seem to increase the risk of bladder cancer.

COMMENTARY BM. PIRACCINI

Detecting and dosing drugs, poisons and chemicals in the nails is a well known procedure, used in general and forensic medicine (J Am Acad Dermatol. 2004; 50: 258-61).

In recent years, many studies have attempted to correlate toenail concentrations of "protective molecules", mainly antioxidants, with the incidence of different diseases. There were contrasting results, mainly due to the small number of cases studied. The work by Wallace et al. includes a high number of patients and does not show a protective role of selenium on bladder cancer. Other recent large-scale studies on toenail selenium levels include:

a large-scale prospective study carried out in the Netherlands supporting an inverse association between toenail selenium and the risk of esophageal and gastric cancer (Gastroenterology. 2010; 138: 1704-13), two studies from North Carolina showing no statistically significant association between toenail selenium levels and inflammation, measured as fibrinogen levels, high-sensitivity C-reactive protein and interleukin-6 (IL-6)(Am J Epidemiol. 2010; 171: 793-800) and between selenium levels and measures of subclinical atherosclerosis (Atherosclerosis. 2010 Jan 25).

Bianca Maria PIRACCINI

Pulsed dye laser in the treatment of nail psoriasis

Oram Y, Karincaoğlu Y, Koyuncu E, Kaharaman F. Dermatol Surg. 2010; 36: 377-81.

The authors report their experience with the use of Pulsed Dye Laser in the treatment of nail psoriasis.
Five patients affected by nail matrix and nail bed psoriasis which had not improved with topical treatments were treated with Pulsed Dye Laser once monthly for three months. Evaluation of efficacy - using the NAPSI score - was carried out one month after the end of treatment. The follow-up lasted three months. Pulsed Dye Laser treatment produced a statistically significant reduction of the mean NAPSI score, as well as the NAPSI scores of the nail bed and nail matrix, considered separately. The clinical symptoms with the best response to Pulsed Dye Laser treatment were nail bed signs (onycholysis and subungual hyperkeratosis). The most resistant one was pitting. Side effects were transient purpura of the treated nail observed in all patients, and pain, lasting 24 hours, was the major side effect.

COMMENTARY BM. PIRACCINI

Due to its selective photothermolysis, capable ablating dermal papillary vasculature, Pulsed Dye Laser has been successfully used in the treatment of skin plaque psoriasis. Its application on nail psoriasis was firstly evaluated in a study that compared Pulsed Dye Laser and Photodynamic Therapy (J Eur Acad Dermatol Venereol. 2009; 23: 891-5). This showed an equal efficacy of the two techniques, more significant on nail bed symptoms. The study by Oram and coll. showed the same results, with improvement of all nail signs, especially those due to nail bed diseases, and resistance of nail pitting.
Treatment of nail psoriasis is difficult and often unsatisfactory, especially when the disease is limited to the nails and the choice of a systemic approach is debatable. Intralesional steroids and systemic acitretin are perhaps the most effective therapies; topical drugs, including steroids and their combinations with vitamin D derivatives, are effective only in nail bed disease, after removal of the detached nail plate.
Thus, any new effective treatment for nail psoriasis is welcome, but its efficacy, tolerability and cost/benefit ratio should be demonstrated. Pulsed Dye Laser effectiveness on nail psoriasis has been shown only in a limited number of patients, and not in double blind controlled studies. The cost of treatment and the fact that Pulsed Dye Laser is not available in every hospital are the two serious limits of this treatment, together with the inevitable pain following each session. Moreover, Pulsed Dye Laser treatment seems to be effective mainly on nail bed psoriasis. This is not surprising, if we consider the deep location of nail matrix capillaries (under the proximal nail fold), but is disappointing, since there are many treatments for nail bed psoriasis (Fig 1), but only a few for psoriasis of the nail matrix (Fig 2).

Fig1 - Onycholysis and subungual hyperkeratosis due to nail bed psoriasis.

Fig2 - Irregular nail plate surface abnormalities due to nail matrix psoriasis.

Bertrand RICHERT

Improvement in docetaxel-induced nail changes associated with cyclooxygenase-2 inhibitor treatment

Nakamura S, Kajita S, Takaji A et al. Clin Exp Dermatol 2009; 34e320-e321

A 50-year-old Japanese woman presented with nail pain, partial onycholysis, paronychia and subungual haemorrhages of all fingers and toenails after receiving six courses of docetaxel treatment (60 mg/kg every three weeks) for breast cancer stage III. A COX2 inhibitor (meloxicam 10mg/day) was started, as a previous report mentioned some benefits in these docetaxel-related side effects. Although the onycholysis progressed for six weeks under treatment, all nails returned to normal after 20 weeks treatment with meloxicam. After withdrawal of the drug, the chemotherapy with docetaxel was continued with no marked nail changes.

Taxoid-induced nail changes including onycholysis, nail-bed haemorrhages, onychalgia and paronychia occur in up to 44% of patients. Many treatments, including topical steroids, antibiotics and sun protection, have been disappointing. Although clipping of the nails or the use of iced gloves might theoretically be useful, there are no reports of these approaches being used.

Several recent reports suggest a link between taxoids and COX2. Preliminary studies showed enhanced anticancer activity with the addition of COX2 inhibitors to taxoid treatment. The authors suggest that in their case meloxicam could be beneficial for taxoid-induced nail changes. They suggest adding a COX2 inhibitor to increase the efficacy of the taxoids and to prevent adverse nail side-effects.

COMMENTARY B. RICHERT

This article seems attractive, but does not, in fact, demonstrate anything. First, this is a single case report. Prescription of meloxicam, once a day, is advocated by the authors to improve docetaxel-induced nail changes. And this is what their article states:

"Although the nail changes particularly the marked onycholysis progressed for 6 weeks after meloxicam treatment they gradually improved and returned to normal at 20 weeks". This clearly means that the treatment did not improve the condition and that the nails returned to normal in a physiological period of time (a fingernail is fully replaced in 16 to 24 weeks) ...

However, what might be interesting is that there were no more marked nail changes during the further chemotherapy sessions, without meloxicam.

When the authors mention that "the use of iced gloves might theoretically be useful, there are no reports of these approaches being used" this indicates that they apparently have not gone through the literature properly, as excellent studies by Scotté et al. have demonstrated that the application of a frozen glove or sock reduced the overall occurrence of nail toxicity from 51% to 11%. The procedure reduced the median time of occurrence of nail toxicity from 106 days in a non-protected group to 58 days in a protected group. The device was easily applied, well accepted by most patients and had no major adverse effect (1, 2).

Pain from the taxane-induced exsudative onycholysis is

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improvement in docetaxel-induced nail changes associated with cyclooxygenase-2 inhibitor treatment

due to the compression of the swollen nail bed between the nail plate and the bone. Therefore, the only treatment which immediately alleviates the extreme discomfort of the patient is to clip all the onycholytic zones with adequate nail nippers, thus freeing the swollen and exsudating nail bed where an alcohol-free antiseptic should be applied (Fig 1, 2). The nails will grow back normally at a normal rate.
This article would have been really interesting if meloxicam had been used as a prophylaxis for the taxane-induced side-effects in a series of patients, especially if preliminary studies had shown enhanced anticancer activity with COX-2 inhibitors ...

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Fig1 - Painful exsudative onycholysis of fingernails.

Fig2 - Clipping of the onycholytic plates immediately alleviates pain.

Trichloracetic acid matricectomy in the treatment of ingrowing toenail

Kim SH, Ko HC, Oh CK et al. Dermatol Surg 2009;35:973-979.

Chemical matricectomy after partial nail avulsion is a well-known, safe and effective technique for the treatment of ingrowing toenails. Classically, phenol and sodium hydroxide have been used in this procedure. Phenol is an effective protein denaturant. It cauterizes by producing a coagulation necrosis in the matrix. Phenol matricectomy has shown high success rates - over 95% - for years. The main drawback of this technique is the excessive drainage and prolonged healing time (up to 6 weeks). In addition to the local side effects, severe reactions such as abdominal pain, dizziness, hemoglobinuria, cyanosis and sometimes cardiac arrhythmia can occur after application of phenol. In recent years, matricectomy with sodium hydroxide has been found to be as effective as phenol matricetomy, with shorter healing periods (2 to 3 weeks) also offering a lower risk of local toxicity. Sodium hydroxide causes an alkali burn and liquefaction necrosis, but no coagulation necrosis, causing less postoperative drainage and more rapid healing. However, prolonged application of an alkali may cause excessive destruction.
Trichloracetic acid (TCA) is a caustic chemical agent which causes coagulation necrosis as does phenol. It produces epidermal and dermal necrosis and then neutralizes by itself without serious systemic toxicity. Because TCA has chemical properties similar to those of phenol and is easy to obtain and store, TCA matricectomy was performed on a series of 40 ingrowing toenails in 25 patients. After a local block, a lateral strip of nail was avulsed. The periungual skin was protected by application of petrolatum jelly. The exposed nail bed and lateral horn of the matrix were chemically destroyed by application of 100% TCA using a cotton ball held with a small-nosed mosquito hemostat for about 1 minute until frosting of the area. Before releasing the tourniquet, the area was lavaged with normal saline to remove the remaining TCA. Antibiotic ointment was then applied and the toe

wrapped with gauze. In all patients, post-operative pain was absent or less than before surgery. Postoperative drainage was mainly resolved within one week and did not last longer than 2 weeks. On a mean follow up of 23 months, the overall success rate in TCA matricectomy was found to be 95%. TCA matricectomy appears to be a safe, simple, effective method with a low postoperative morbidity, a high success rate and no long-term complications. It is necessary to perform additional larger studies for standardization of the technique.

COMMENTARY B. RICHERT

The technique used in this article is very tempting! Indeed, the main drawback of chemical matricectomies is the oozing which lasts for several weeks and 100% trichloracetic acid seems to reduce it to almost one week in most patients.
Of course, the authors try to promote their technique by disparaging other cauterants:
- phenol matricectomy has been demonstrated to be safe both for the patient and the surgeon (1, 2) and no systemic toxicity is to be feared. Ideal application time is 1 minute (3).
- sodium hydroxide is an alkali that should ideally be applied on the matrix for 1 minute. Longer application time (up to 3 minutes) will only increase the inflammatory reaction and the oozing time (4). There is no excessive destruction of tissue as mentioned by the authors.
100% TCA acts exactly like phenol by inducing coagulation necrosis and therefore is as comfortable as phenol post operatively with similar results and outcome. The technique is identical to the one with phenol (Fig 1, 2, 3) or sodium hydroxide and the application time is identical. Recently several studies have demonstrated the ideal time of application of each cauterant, their average oozing time and post op pain (Table 1).
So, when will you start using TCA?

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Fig1 Fig2 Fig3

Fig1, 2, 3 - Chemical cautery of a lateral matrix horn in an ingrowing toenail.

	PHENOL	NaOH	TCA
Reccurence rate	4,9	4,2	5
Post op pain	moderate	moderate	absent
Pain (days)	0,71	0,29	none
Complete healing (days)	18,02	10,81	?
Oozing (days)	17,20	9,3	8
Application time (mn)	3	1	1

Table 1 adapted from:
1. Bostanci S, Kocyigit P, Gürgey E. Comparison of Phenol and Sodium Hydroxyde chemical matricectomies for the treatment of Ingrowing Toenails. Dermatol Surg 2007;33:680-685
2. Kim SH, Ko HC, Oh CK et al. Trichloracetic acid matricectomy in the treatment of ingrowing toenail. Dermatol Surg 2009;35:973-979.

Bertrand RICHERT

Tips and tricks in nail surgery

Abimelec Ph. Sem Cut Med Surg 2009 ;28 :55-60.

This article covers a lot of tips and tricks in nail surgery. As it is impossible to summarize, we list below some key sentences.

Working on nails requires magnification. Surgical loupes and dermoscopy are very useful for this. For injections in the nail apparatus, use syringes with permanently attached ultrafine needles (dental syringe or 0,3 ml insulin syringe). Distal nail blocks work rapidly and well: the distal digital block is best for complete anaesthesia of the nail unit (Fig 1). Matricial block is indicated for surgery on the proximal third of the nail apparatus. Three instruments are a must in nail surgery: the elevator (Lempert, Locke or Freer), dual-action nail nippers are invaluable for cutting thick nails (Fig 2) and the English nail splitter with its flat lower blade and cutting upper one. Working in a bloodless field is mandatory in nail surgery. Applying a full sterile glove on the hand of the patient, piercing its extremity and rolling it down to the base of the finger offers an exsanguination of the digit and a sterile surgical field (Fig 3). Moreover, this device should not be forgotten at the end of the procedure. Exposure of a lesion located under the nail requires nail avulsion. Several techniques are possible, but partial nail avulsions should always be preferred. The choice of the procedure should be tailored to each case. When it is not necessary to keep the nail plate for histology, replacing it and securing it will protect the wound naturally and effectively for 3 to 12 weeks (Fig 4). When heavy drainage is expected, perform openings at some place on the plate.

When dealing with a nail matrix pigmentation that is longitudinally oriented, the recommended transverse excision is not feasible: the pigment may be removed in a longitudinal ellipse and closure without excessive tension for the lesion should be less than 3 mm. For larger lesions, undermining is necessary. Recently, tangential matrix excisional biopsy has been described. After full exposure of the matrix area, the pigmented area is "shaved" with a Teflon coated blade. The specimen is transferred onto a piece of cardboard. This superficial excision heals with minimal scarring, there is mostly just nail thinning. Segmental phenolisation is a simple technique for both juvenile and pincer nails with a high success rate. After segmental avulsion, the elevator is dipped into the 88% phenol solution and the tiny layer of liquid covering the instrument by capillarity is applied onto the matrix and the corresponding nail bed. If a pyogenic granuloma is present, a drop of phenol is applied onto it. Application time of one minute is sufficient.

COMMENTARY B. RICHERT

Much can be learnt from this article for those who are interested in nail surgery. If you haven't read it yet, order it! Using the elevator for phenolization is very simple, it avoids excessive cauterization of the adjacent tissues ... and is really invaluable for cauterization of a spicule (Fig 5).

Fig1 - Distal digital block using a Luer-lock syringe and a 30G needle.

Fig2 - Dual action nail nipper.

Fig3 - Tourniquet and exsanguination of the digit using a sterile glove.

Fig4 - Total nail avulsion with plate replacement after removal of a large exostosis. Note the perforations to allow drainage.

Fig5 - Chemical cauterization of the cavity, previously occupied by a spicule, using capillarity of the cauterant onto the elevator.

Bertrand RICHERT

Pre-operative skin and nail preparation of the foot:
comparison of the efficacy of 4 different methods in reducing bacterial load

Becerro de Bengoa Vallejo R, Losa Iglesias ME, Cervera LA et al.
J Am Acad Dermatol 2009; 61 :986-992.

Infections after orthopedic surgery are higher in procedures involving the foot and ankle than in those involving other areas of the body. The difficulty of eliminating bacteria from the forefoot before surgery has been well documented. Although multiple factors are involved in postoperative infection, the anatomy of the foot and the large number of resident organisms may help explain the relatively high infection rates observed in foot and ankle surgery. The optimal method for preparing the skin and nails for foot and ankle surgery remains uncertain and is the subject of ongoing research. Studies have shown that eradicating bacteria from the nailfolds and web spaces of the foot is particularly difficult. Use of an effective preoperative skin-preparation method is an important step in limiting surgical wound contamination and preventing infection.

In this prospective randomized study, four methods of skin and nail preparation to eliminate bacteria from the hallux nail fold and the web space of the normal foot in 28 healthy adult volunteers were compared in term of efficacy. This was evaluated by comparing the difference in the total bacterial load before and after skin preparation. Exclusion criteria included a history of tinea pedis, onychomycosis, paronychia, nail trauma or subungual hematoma, nail deformities and disorders, diabetes and the recent use of nail polish. No special instructions for bathing or showering were given to the participants before the study.

Method 1: 7,5% povidone-iodine scrub for 5 minutes + 10% povidone-iodine paint

Method 2: prewash with 70% alcohol for 3 minutes + Method 1

Method 3: 4% chlorhexidine gluconate scrub for 5 minutes + 70% alcohol paint

Method 4: Footbath in 4% chlorhexidine solution + Method 2

Specimens were obtained from cotton swabs rubbed in an identical manner on the medial nailfold of the hallux and in the webspace between the hallux and the second toe. All specimens were obtained just before and just after skin and nail preparation. All solutions were allowed to dry before specimens were collected.

The analysis of the results showed that Method 2 is the most effective of the 4 tested schemes as it is associated with a low post-treatment positive culture rate (32%), and also achieves a considerable reduction in the bacterial load. Method 4 is the second most effective, because, although it is associated with the lowest post-treatment positive culture rate (28%) it also shows a significant reduction in the bacterial load after skin preparation. Therefore, Methods 2 and 4 were the most effective with no significant differences between them, Method 2 being, however, less time-consuming.

Concerning the nail fold, the greatest reduction in the bacterial load was achieved by Method 4, followed by Method 2, then Method 1 and finally Method 3.

To evaluate the efficacy of antiseptics, it is important to quantify the total bacterial load before and after skin preparation and determine the amount of reduction of the initial inocula. The foot has a large resident microbacterial flora and an anatomy which renders the eradication of skin bacteria difficult before surgery. The results of this study indicate that incorporation of alcohol and povidone-iodine into the preoperative skin and nail preparation process may help reduce the bacterial load.

COMMENTARY B. RICHERT

It is surprising to see the number of papers that have appeared over the last years on disinfection of the foot. However, what is most astonishing are the results claimed by each of the studies.

Several procedures have been tried and/or compared:

- Chlorhexidine scrub + isopropyl alcohol paint gave 38% of positive cultures in the nail fold (1)
- Povidone iodine (PI) scrub + PI paint with sponge gave 76% of positive cultures in the nail folds, whilst alcohol scrub + alcohol paint with bristles gave only 12% of positive cultures in the nail folds (2)
- Comparison between spray and paint with povidone iodine showed that spray works twice as fast as paint with only 7% positive cultures after spraying and 2% positive cultures after painting (3)
- Preop chlorhexidine footbath prior to "standard" surgical preparation provides better skin flora reduction (0% post op positive cultures) than placebo (water) (16% post op positive cultures ...) (4)
- It has also been demonstrated that nail brushing does not decrease bacterial numbers and is unnecessary (5)

The present paper written by a team of microbiologists and podiatrists is interesting for several reasons:

1/ They sampled the hallux nail folds and the toewebs in a group of healthy volunteers submitted to a disinfection procedure exactly as if they were undergoing surgery.

2/ The two groups were sampled before any procedure of disinfection, then after several protocols of disinfection which had dried.

3/ They evaluated not only the positive culture rate but the reduction in the bacterial load (number of bacteria per square centimetre of skin expressed in log 10).

This study showed that the best procedure for skin preparation in nail surgery is a footbath in 4% chlorhexidine solution + prewash with 70% alcohol for 3 minutes + 7,5% povidone-iodine scrub for 5 minutes + 10% povidone-iodine paint. This is quite a time consuming procedure!...

It appears that trying to sterilize the toenail is almost utopian with current disinfectant protocols. Literature states that the rate of postop infection in foot and ankle surgery is quite high. But what is the rate of postop infections in nail surgery? And do nail surgeons use such heavy and time-consuming disinfection protocols? As these questions have not been answered it would seem quite logical to opt for alcohol scrub and paint procedure until anything better has been demonstrated.

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Bertrand RICHERT

Survey of patients' experience after nail surgery

Walsh ML, de Berker DAR. Clin Exp Dermatol 2009; 34:54-156.

Nail surgery is performed to aid diagnosis and treatment of nail disease. The aim of this survey was to determine whether sufficient preoperative guidance was provided to people having nail surgery and to ascertain the most important aspects of morbidity after the event. Patients undergoing nail surgery during a 14-month period were identified from surgical lists. A questionnaire was sent to all those who had undergone a procedure involving either the nail fold or the distal digit during this period. All nail surgeries were performed under local ring block with 0.5% bupivacaine using a large rubber sterile tourniquet left in place no longer than 20 minutes. 62 patients were included and divided into two groups: patients from group A were contacted four to six months postoperatively and those from group B six to twelve months postoperatively. The response rate was 65%. Patients from each group were equally represented. 73% had undergone surgery to a finger and 27 to a toe. Of the 62 patients, 20 had undergone a major procedure and 42 a minor procedure. 77% reported that they completely understood the nature of their surgery and 63% accepted the limitations that they would face. 19% reported "no pain" in the 2 weeks after surgery. During the 3 first days after surgery, 29% reported "mild pain", 35% "moderate pain" and 16% "very severe pain". Sensation was altered in 47% of patients with the incidence being similar in both groups. There was no connection between occurrence of paresthesia and extent of the surgery undertaken. Types of altered sensation were similar in both groups, the most common being numbness or loss of sensation (16%) and tingling or pins and needles (8%). When mapping the locations of altered sensation, the digit tip was the most commonly affected (34%) with the proximal nail fold (28%) and the margin beneath the free edge of the nail (24%).

The results of this survey illustrate that most patients felt they understood the nature of their nail surgery and the postoperative limitations they would face. Occurrence of paresthesia did not relate to the extent of surgical procedure. Paresthesia is not well documented in literature with regards to nail surgery. Postoperative cutaneous sensory disturbance has been reported in a variety of surgeries. Altered sensation is likely to arise from the severing of small nerves during surgery. Duration of sensory disturbance appears to be short-lived (< 9 months) and in some cases no improvement was experienced. Postoperative pain was of short duration. No patients required analgesia after 6 weeks. Although there is a caution against the use of nonsteroidal anti-inflammatory drugs in nail surgery in one US guideline the authors have found them very useful with no effect on postoperative bleeding.

This survey has shown that most patients having had nail surgery in the authors' department were well informed about their procedure, its results, the potential complications and its limitations. Patients should be counselled regarding the risk of altered sensations in the digits.

COMMENTARY B. RICHERT

This excellent paper demonstrates that clear information should be given to patients in pre-op consultations. This is time consuming, but is essential to allow the patient to understand all the ins and outs of the procedure. This is confirmed in the study, showing that if sufficient preoperative guidance is provided to patients undergoing nail surgery, about three quarters of them will acknowledge that they completely understand the nature of the surgery they underwent and the limitations they would face.

Some physicians like to give patients an information sheet to remind them of their appointment, everything that they should do before the operation (footbath, cream ...) and any other information about work interruption. Another sheet may be given after surgery containing correct home care, evolution over time and next appointment. Since we have been delivering such forms in our department (for more than 10 years) patients have almost never complained about any misunderstanding concerning their operation.
Another very interesting point is the mapping of paresthesia after nail surgery which occurs in about half of the patients, the distal tip being the most affected. All nail surgeons have observed this phenomenon. The main point demonstrated here is that occurrence of paresthesia is not related to the extent of the surgical procedure. We could also add that there is no connexion with the anesthetic used, as we have been using rovipacaine 2mg/ml or plain 2% lidocaine for the same procedures and observed exactly the same phenomenon. It also appears that in about 10% this paresthesia is irreversible. Unfortunately, the authors did not offer any new hypothesis as to why this side effect appears. Severing small nerves during the procedure might be one explanation, but it remains insufficient, as sometimes the incision runs on one side and the paresthesia occurs on the other side. It sometimes occurs even if no incision has been performed, as in the case of an intralesional injection of steroids under local block ...
One point that should also be noted is that the authors used non-steroidal anti-inflammatory painkillers with excellent results and no effect on postoperative bleeding.

Clinical study of treatment for recalcitrant ingrown toenail by partial distal phalanx removal

Li, J, Chen J, Hong G et al. J Plast Recontruct Aesth Surg 2009 ;62 ;1327-1330.

For the authors, ingrowing toenail is a complex problem with a high recurrence rate after different types of surgical management, such as nail plate removal, partial matrix and plate removal, partial nailfold and nail matrix removal or phenol ablation of the nail matrix. They define recalcitrant ingrown toenail as a condition evolving for more than two years and in patients having experienced nail avulsion more than five times or having been treated at least once with another surgical management technique.
They included 31 patients (38 toenails) with an average age of 17 years. The duration of the condition ranged from 25 months to 14 years with an average of 31 months. All patients had had several nail avulsions; 8 patients experienced a recurrence after removal of the nail fold; 6 patients experienced recurrence after partial nail matrix removal.
They found that most patients (55%) with recalcitrant ingrown toenail had an upturned deformity of the distal phalanx visible on radiographic images. This abnormality was not noted in the control group. They think that this upturned distal part of the distal bony phalanx deforms the nail matrix and deepens the nail grooves.
As a treatment, they proposed a new procedure: they removed an elliptical wedge of tissue, running from one lateral side of the toenail to the other, with a maximum width of 1 cm. The distal half of the phalanx was sharply dissected along the surface of the distal phalanx in a distal proximal direction. The distal half of the distal phalanx was transected with a bone cutter and then smoothed. The dorsal flap was pulled plantarward, and the defect was closed with interrupted non-absorbable sutures.
29 patients were eligible for an average period of 21 months follow-up. No recurrence was observed. Patients were pleased with both cosmetic and non-symptomatic results.

In conclusion, the authors claimed that:
1- this new technique has a lower or almost zero rate as compared to others
2- this current method is better for nail plate and matrix removal as it maintains the morphology of the great toe
3- this technique decreases the possibility of postoperative infection and nail detachment when compared to phenolic ablation
4- they are the first group to consider that the distal phalanx plays a crucial role in recalcitrant ingrown toenails and to design a surgical technique to treat it.

COMMENTARY B. RICHERT

This amazing paper shows once again that surgeons (both authors and reviewers) pay very little attention to literature from other specialities. The technique indicated in this paper is not new, as it combines both a procedure described by Eckart Haneke years ago for pincer nails (1) and an even older technique for distal embedding (2).
The only picture they provide is a case of distal embedding with a bulky distal wall against which the new formed nail abuts (Fig 1). This probably results from a previous nail avulsion. Repeated nail avulsions were thought to permit the pinched nail bed tissue to flatten spontaneously during the period of nail plate regrowth. However, many patients experience a dramatic worsening of their condition after nail avulsion, and it has been found that there is rarely any benefit from this procedure. Furthermore, nail avulsion is known to increase the physiological transverse curvature of normal hallux nails (3). Repeated nail avulsions, which seem to be the golden treatment in China for ingrowing toenails, may also lead to chronic dorsal distorsion of the pulp resulting from the loss of counterpressure normally exerted by the nail. The nail bed is tightly bound to the underlying bone by conjunctive fibers and the upward traction of the soft tissues may result in a traction osteophyte (Fig 2), as in pincer nails. The authors observed the latter in half of the patients on X-ray examination.
The paramount role of the distal phalanx in the shape of the nail was suggested long ago by Robert Baran (4, 5) and its role in pincer nail deformation was demonstrated 10 years ago (3).
As treatment, the authors of this paper performed a partial amputation of the distal half phalanx, which seems extremely aggressive for such a condition: a generous removal of the traction osteophyte would have been sufficient (Fig 3 & 4).

Of course, to allow a proper repositioning of the distal wall, a fishmouth incision removing a large wedge of soft tissue followed by suturing allows immediate freeing of the free edge of the nail (Fig 5), a technique which has been known for a long time (2).
This technique is not new in old Europe and is certainly very useful in distal embedding and in pincer nails. Of course, this is not a "cure-all" for ingrowing toenails as suggested by the authors.

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Fig1 - Distal embedding.

Fig2 - X-rays showing distal hyperostosis in a pincer nail.

Fig3 - Surgical exposure of the hyperostosis of the distal tuft

Fig4 - After surgical removal of the hyperostosis of the distal tuft.

Fig5 - Removal of a large wedge of soft tissue in distal embedding.

The nail - What's new ? n°3

Clinical cases

Robert BARAN

Robert BARAN's clinical case

A 12-year-old boy was referred to our clinic by a dermatologist Head of his Department, for a unidigital swelling, presenting as a clubbing with enlargement of the nail plate of the fourth left toe. There was no change in the length of the terminal phalanx, nor was there evidence of inflammation. In fact, physical examination showed a hyperconvex nail, but not real clubbing, and above all, the fourth toe of the right foot was normal as opposed to the "curved nail of the fourth toe", a common feature of a congenital condition where the first toenail is curved, usually bilaterally. This condition is inherited as an autosomal recessive.

Pressure on the dorsum of the distal phalanx of the affected toe caused tenderness, but the patient did not experience real pain spontaneously. Sweating over the involved area was almost normal.

No obvious abnormalities were visible on radiography. We theorised that the appearance of this digit was compatible with the diagnosis of osteoid-osteoma (Fig 1).

After differential diagnosis involving glomus tumor, epidermoid cyst, sclerosing osteitis of Garré, localised cortical bone abscess and arteriovenous fistula, a sonography was performed and provided an argument in favour of our diagnosis. Surgery was decided, the nidus of the distal phalanx was removed and confirmed by our pathologist. The treatment starts with a fishmouth incision, which provides good exposure, followed by an "en-bloc" resection of the lesion

COMMENTARY

This case was really atypical. Usually, all patients complain of a nagging ache, especially at night.

In this case there was no increase in sweating; radiography did not show an obvious nidus with a central opacity within the translucent area. MRI was not carried out for family reasons.

Due to the absence of real pain, we did not observe the distinctive salicylate pain relief obtained in three quarters of patients.

Fig1- Osteoid-Osteoma (Courtesy of P. Del Giudice, France)

Osvaldo CORREIA's clinical case

A 2-year-old girl contracted an upper respiratory tract infection followed by a malaise which lasted one week and was treated with ibuprofen. Two weeks later a spontaneous, non-painful, separation of the nail from the matrix area, beginning at its proximal end and resulting in the shedding of the nail (onychomadesis) was seen in three nails of the left and the right hand (Fig 1-2) without any skin lesions or significant blood alterations. There had been no exposure to sun. Four months later, normal nail growth was seen and the nails recovered completely with only daily application of emollients (Fig 3).

Spontaneous separation of the nail from the matrix area (onychomadesis) is usually seen after serious acute conditions. It can be seen after drug reactions, unrelated to any specific drug, but also after bullous diseases, hand, foot and mouth disease by coxsackie A viruses, acute paronychia, severe psychological stress, or it may be idiopathic.

Sometimes the diagnosis of onychomadesis is underestimated due to ignorance of the disease and the long interval between the acute viral process and the nail shedding. Patients and their family should be advised as to the nature of the process in order to avoid unnecessary treatment.

Fig1 - Nail shedding (Onychomadesis) Clinical picture

Fig2 - Nail shedding (Onychomadesis) Dermoscopic picture

Fig3 - Nail shedding (Onychomadesis) Clinical picture four months later

COMMENTARY O. CORREIA

Onychomadesis is usually the consequence of an acute, serious illness.

It appears during reaction to medicine without specific treatment and also following bullous diseases: coxsackievirus A, hand, foot and mouth disease, acute paronychia, severe psychological stress but it can also be idiopathic.

Occasionally, the diagnosis of onychomadesis is under estimated due to both lack of knowledge and the long interval between the severe viral infection and the shedding of the nail. The patient and the families should be informed of the procedure in order to avoid unnecessary treatment.

COMMENTARY R. BARAN

Onychomadesis is the equivalent of Beau's lines and indicates an arrest in nail activity which is estimated at four to eight weeks.

Sophie GOETTMANN

Sophie GOETTMANN's clinical case

Melanoma in situ or monodactylous lichen planus?

A 56-year-old patient, otherwise in good health sought our opinion on a dystrophic monodactylous naevus of the right index (Fig 1). He said that he remembered that this nail had always been darker than the others. A longitudinal groove had appeared associated with distal fragility four years before. He was given a treatment with an antifungal combined with urea 40%, which had partially destroyed the nail plate. During its regrowth, the patient had noticed the individualisation of two longitudinal melanonychias with the same distal nail fragility. Clinically, the nail plate presented with a thinning, longitudinal hyper striation, a lamellar onychoschizia with a lateral wing almost detached from the rest. The nail plate presented with two longitudinal melanonychias which were pale with blurred borders. Under dermoscopy the pigmentation of the two bands was homogeneous, pale, not worrying: a diagnosis of monodactylous pigmented lichen planus or melanocytic proliferation was suggested. Surgical exploration of the nail matrix showed pale pigmented disseminated areas with irregular outlines (Fig 2). Two big pieces were removed from the matrix and histology showed an atypical melanocytic proliferation leading to the diagnosis of melanoma in situ.

COMMENTARY S. GOETTMANN

This observation is interesting for several reasons.

- The long history of this pigmented lesion which seemed to have been present for at least 15 years suddenly showed an alteration of the structure of the nail plate.

This could result from the transformation of a lentigo into a melanoma in situ.

The appearance of LM, after treatment combined with antifungal and urea, can be explained either by the natural course of the melanocytic proliferation or by the acceleration of melanin production after the treatment (increase of post inflammatory pigmentation)

- The lichenoid aspect with nail thinning ridging and onychoschizia. Recently, we have reported three cases of achromic melanoma with lichenoid appearance of the nail unit with particularly misleading clinical signs. The nail dystrophies observed in these cases were similar to those presented by the above mentioned patient, but without pigmentation. The lichenoid aspect is probably due to a matricial dysfunction resulting from melanocytic proliferation. The pigmentation is homogeneous under dermoscopy without the classical signs attributed to melanoma.

This observation prompts us to confirm that:

- any unexplained monodactylous nail dystrophy should indicate the possibility of a malignant tumour, a melanoma, and necessitates a biopsy
- the diagnosis of nail monodactylous lichen planus should be checked histologically
- in the presence of an unexplained nail dystrophy, a transitory pigmentation of the lesion should always be looked for
- there are no specific clinical criteria of melanoma in situ. Therefore, one should consider the history of the pigmented lesion and be very suspicious when a pigmentation which was stable, changes.
- dermoscopy may be reassuring in very pale melanonychia and should not be postponed. Histological examination should be carried out when the mentioned criteria become worrying.

Fig1 - Monodactylous nail dystrophy, with progressive worsening. Two pale longitudinal melanonychias associated with blurred borders. Melanoma in situ or pigmented lichen planus?

Fig2 - Appearance of the matrix per-op: pigmented disseminated areas with irregular outlines.

Eckart HANEKE

Eckart HANEKE's clinical case

Fig1 -Subungual cirsoid angioma

Subungual cirsoid angioma

An 81-year-old male patient presented at our nail clinic for a tender lesion of his left ring finger. He had been complaining of progressive nail dystrophy for about 1½ years (Fig1). On probing the proximal nail bed and distal matrix a circumscribed pain was elicited, which gave rise to the provisional clinical diagnosis of a subungual glomus tumour, although the pain intensity was not absolutely typical. The diagnosis and treatment were discussed with the patient and he opted for surgical removal.

The hand was thoroughly disinfected, a transthecal anaesthesia with 3 ml 1% ropivacaine (Naropin ®) was applied (Fig 2) and a surgical glove was donned. A tiny hole was cut into the ring finger of the glove (Fig 3) and the finger glove rolled back to exsanguinate the finger and provide a tourniquet (Fig 4). The radial half of the fingernail was gently separated from the matrix and elevated in a trap door manner (Fig 5). An oblique incision was made at the junction of the proximal and radial nail wall permitting visualisation of the lateral half of the matrix (Fig 6). To facilitate surgery, the opened nail plate was held with a small haemostat clamp and the nail folds spread out with sutures (Fig 6). A small, slightly violaceous spot became visible (Fig 6 & 7). A small transverse section was made over it in the matrix, and the lesion dissected from the matrix connective tissue The incision was sutured with 6-0 polyglactane stitches (PDS II 6-0 ®). The nail plate was laid back and stitched to keep it on the matrix and the incised nail fold was sutured.The glove tourniquet was removed. Finally, a padded circular dressing with an antibiotic ointment was applied for one day, and the patient asked to elevate his arm for one to two days. The dressing was changed in a lukewarm hand bath with some povidone-iodine soap which allowed any clotted blood to dissolve. A clean wound was seen and the patient reported no pain whatsoever for more than 12 hours before the finger became tender. The stitches were removed after 10 and 12 days. Six weeks after surgery, a normal nail could be seen growing out from under the proximal nail fold.

Histopathological examination showed an arteriovenous angioma of cirsoid type.

A variety of lesions may cause pain. Glomus tumours are the most commonly known subungual tumours to elicit very typical pain when probed, through an inadvertent shock to the nail organ, or contact with anything cold or other types of local trauma. The pain is acute and sharp and often radiates into the arm, sometimes even up to the shoulder. Applying a blood pressure manchette and pumping it up to approximately 300 mm Hg stops the pain. Even though our patient experienced a well localized, circumscribed pain, this was not as severe as is typical for glomus tumours. Other typically tender or painful subungual lesions are keratoacanthoma, osteoid osteoma and some other very rare neoplasms, but the clinical picture was not characteristic for any of these. After extirpation, a small lesion of reddish colour was seen in contrast to the glassy-greyish appearance of the glomus tumour. Histopathology then ruled that out and confirmed the diagnosis of a cirsoid angioma.

We had already seen a patient with subungual cirsoid angiomas of both thumbs (unpubl.) and the following authors described three patients with this entity. Burge SM, Baran R, Dawber RP, Verret JL. Periungual and subungual arteriovenous tumours. Br J Dermatol 1986; 115:361-6

Fig2 - Transthecal block anesthesia is performed by inserting the injection needle into the volar metacarpo-phalangeal crease.

Fig3 - A sterile surgical glove is donned and a very small hole cut into the glove finger.

Fig4 - The glove finger is rolled back exsanguinating the finger and providing an excellent tourniquet as well as a sterile environment.

Fig5 - A nail elevator is inserted under the proximal nail fold and then moved about 160° in order to allow its tip to be slid under the proximal end of the nail plate.

Fig6 - The proximal nail fold has been incised on one side and reflected; the nail plate has been excised transversely and opened in a trapdoor fashion allowing the lesion to be visualized.

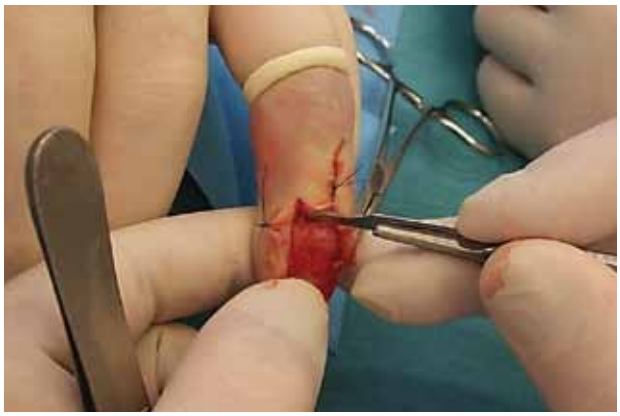

Fig7 - The tip of the scalpel blade points to the lesion that is indicated by a rather inconspicuous violaceous spot in the matrix.

Mario LECHA

Mario LECHA's clinical case

This inherited disease included in the group " Keratinization Disorders " is not common. Usually inheritance is autosomal dominant.
The clinical picture is characterized by the presence of thickened, wedge-shaped nails together with focal palmo-plantar hyperkeratosis and some localised foot blistering, follicular hyperkeratosis and oral leukokeratosis - Jadassohn-Lewandowsky syndrome (Pachyonychia congenita type-1), or by the presence of natal teeth, cutaneous cysts and hair abnormalities without major keratoderma or oral lesions - Jackson - Lawler syndrome (Pachyonychia congenital type-2).
Keratin K6, K16 and K17 gene mutations have been established in this disease.
In our department, we have followed a patient with Pachyonychia congenita type 1 since November 1969. She presented the clinical picture of the disease with oral mucosa leukokeratotic lesions, thick palmo-plantar hyperkeratosis with occasional blister formation and hyperkeratosic thickened nails. No hair alterations or hyperhidrosis were present. The nails showed the characteristic alterations.

Treatment possibilities in this disease are limited and Acitretin is the best approach.
The patient has been treated periodically with Acitretin since November 1986.
The dose administered was 25-30 mg/daily alternating treatment periods of 3-6 months and treatment free periods. To date, lesions have improved substantially with the exception of nail alteration. Nails are still hyperkeratotic and practically without significant change. Therefore treatment of nails is still a challenge in this disease.

Bianca Maria PIRACCINI's clinical case

A 54-year-old woman consulted us for the presence of white spots in the fingernails, which she had noticed several months before. The clinical examination revealed that all fingernails presented several transverse lines of leukonychia, more marked in the 2nd and 3rd fingernails. Other signs were mild paronychia with cuticle hyperkeratosis and Beau's lines (Fig 1).
The patient was otherwise healthy and did not take any medication. She was a housewife who manicured her own hands every 3-4 weeks.

What is your diagnosis?

Traumatic transverse true leukonychia due to manicure.
The presence of a white discoloration of the nail is termed leukonychia, which can be distinguished between "true" leukonychia, when the discoloration is due to a color of the nail plate, and "apparent" leukonychia, when the nail color results from nail bed changes.

In the former, the white discoloration does not change with pressure and moves distally with nail growth.

Bianca Maria PIRACCINI's clinical case

True leukonychia is a sign of an altered keratinization of the distal nail matrix, which results in remnants of parakeratotic cells within the nail plate. These cells are not transparent and reflect light, producing the white color. Nail growth causes distal progression of the white spots, which often disappear before reaching the distal margin.

According to the size and distribution of the white color in the nail, true leukonychia can further be classified into three types: punctate, striate and total/subtotal. Punctate leukonychia is common in children, and does not indicate any disease or deficiency. Transverse leukonychia results from a traumatic insult to the distal matrix. In toenails, it can be seen in the great toes of patients with thick nails which are kept long, and results from trauma of the footwear transmitted to the matrix by the thick plate (1) (Fig 2). In fingernails, transverse leukonychia is seen as a consequence of an overly aggressive manicure, where the cuticles are pushed back too forcefully. This mechanically damages the underlying distal matrix. The typical transverse shape of the leukonychia follows the form of the proximal nail fold. Another consequence of manicure is mild paronychia The presence of several parallel bands of transverse leukonychia in the same nails indicates repeated episodes of manicure, and each episode can be traced temporally, given that the nail growth rate of a fingernail is approximately 3.5 mm/month (2). Discontinuation of trauma results in progressive disappearance of the nail symptoms (Fig 3).

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Fig1 - The patient's fingernails showing white spots with an irregular transverse distribution.

Fig2 - Transverse leukonychia of the great toenails: multiple lines of transverse whitish nail plate discoloration caused by repeated microtrauma due to footwear.

Fig3 - Transverse leukonychia due to manicure: discontinuation of periodic trauma induces distal progression of the leukonychia and the growth of a new transparent nail plate.

Bertrand RICHERT

Bertrand RICHERT's clinical case

This 4-year-old boy was referred to our department for evaluation and treatment of an acquired nail dystrophy (Fig 1).The condition slowly developed over a period of eight months. There was no history of trauma. The nail changes were restricted to one lateral side of the nail plate. They consisted in nail thinning associated with longitudinal ridging, splitting and a certain degree of koilonychia. There was no associated skin or hair alteration.
X-Rays, prescribed by the paediatrician, were normal too. The parents were worried as the nail dystrophy was increasing with time.

Fig1 - Acquired nail dystrophy restricted to one side of the nail.

What would your attitude be?

The clinical aspect is very evocative and the parents should be reassured.
This is a typical case of nail lichen striatus.
Nail involvement in lichen striatus is uncommon and is almost always associated with a history of typical skin lesions if nail dystrophy exists. A recent review of literature (1) has revealed that only 30 cases of lichen striatus have been reported from 1941 until now. The mean age for the condition was 12 year-old. None of the subjects was under 2 year-old. The same paper reports the first case of nail lichen striatus in a 10 month-old boy. This child predominance is concordant with the age distribution of skin lichen striatus that also mainly affects children. In one series, it was very obvious that this disease mostly affects males (9 males: 3 females), and suggested that the condition may arise more often in children with atopic diathesis (2). It was also demonstrated that nail involvement was more frequent on the fingers, especially the thumb. The nail dystrophy, facing the blaschko-linear skin lesion if any, is very characteristic: nail thinning associated with longitudinal ridging and splitting. Koilonychia may be associated as the consequence of the nail thinning (Fig 2). Hyperkeratosis of the bed may also be observed (3). Amazingly, the nail dystrophy is restricted to one side of the nail, either the lateral side (most common) or the median part of the plate. The linear skin lesion may precede the nail dystrophy and may be absent at the time of the consultation. Careful questioning is a must.
Lichen striatus with nail involvement may occur in adults in very rare instances. It has been described after trauma (4, 5). It should be differentiated from monodactylic lichen planus

Fig2 - Close up of the plate dystrophy showing koilonychia resulting from nail thinning.

which may leave permanent nail dystrophy. Recently, three cases of amelanotic melanoma presenting as limited onychorrhexis in one nail were reported (6). This highlights the fact that any monodactylic linear nail dystrophy in adults should be biopsied.

Isolated nail involvement is rare. Only three cases have been reported in literature (3). This may be due to the fact that diagnosis was made after the disappearance of a discrete linear eruption facing the nail dystrophy which the parents did not notice. Involvement of two fingernails is exceptional and has been reported in only 4 patients. In all cases the condition affected two adjacent fingernails (1).

Diagnosis is clinical. This disease should be strongly suspected when a child or a young adult presents with lichen planus-like nail abnormalities localized on only one side of a single nail. If a nail matrix punch biopsy is performed, it will reveal histopathological changes resembling those of skin lichen planus (3).

Abstention is the key word for this nail disorder, as all patients will recover a complete normal nail in less than a year (1, 2, 3). Recently, one case reported improvement of the condition after 3 months (7) following application of tacrolimus ointment 0,03%. Examination of the pictures provided in the article is not really convincing. Unfortunately two fingernails were affected and the physician treated them both, instead of applying the ointment on one only. The improvement can probably be attributed to the natural evolution of the disease.

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The nail - What's new ? n°3

Continuing Medical Education

Robert BARAN

40% urea chemical avulsion

We think that a few clear lines will help the physician in his task.

Urea avulsion is a painless chemical method for keratinolysis which has superseded partial surgical avulsion, especially and the elderly. It may be repeated as necessary.

The interest for 40% urea in the treatment of onychomycosis (Fig 1) is due to fact that only the pathological areas can be lifted easily. The action of 40% urea is focused on subungual attachment of the pathologic keratin (a normal nail cannot be avulsed). After applying the urea preparation (Fig 2a,b) under occlusion (with adequate dressing) (Fig 3a,b) the nail is dissected using a nail clipper or scissors (Fig 4a,b).

This technique allows the bed, which is the reservoir for fungi elements, to be exposed, then to be treated with traditional topical antimycotics (Fig 5) for two or three months while waiting for it to be cured (Fig 6) (12 to 18 months for the big toe).

The mechanism of keratolytic properties of 40% urea is double:

1- It modifies the adherence of the nail to its bed by weakening the pathological attachments.

2- It softens the nail keratin This explains why, in the case of onychomycosis, it becomes easy to lift the nail, either partially or almost totally, however thick it is, and to cut it easily without an anesthetic. Therefore, the physician acts purely mechanically and not pharmacologically or immunologically in the elimination of the fungi load.

No real contraindication to urea avulsion exists. However, a third party may be necessary in the polydactylic forms in the elderly.

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Fig1 - Distal-lateral onychomycosis sparing the middle area of the nail plate

Fig2a
Scheme showing application of 40% urea ointment.

Fig2b
Appearance after application of the ointment.

Fig3a
Schematic aspect of the dressing.

Fig3b
Aspect of the well placed dressing.

Fig4a
Schematic section of the nail plate after 21 days of application of urea ointment under occlusion.

Fig4b
Appearance of the nail plate after section of the pathological areas.

Fig5
Scheme of application of a traditional antifugal treatment on a nail from which pathological keratin has been removed.

Fig6
Result after a three month treatment and after complete growth of the nail plate.

notes

Chief Editor Didier Coustou
Published and distributed in 2011 by Pierre Fabre Dermatologie
Registration of copyright : December 10

Composition Florence Richert - graphic designer - www.florencerichert.book.fr

Pierre Fabre
DERMATOLOGIE

RICHERT*graphisme* 11/10 - XXXXXX