

TRAUMATIC NAIL ABNORMALITIES

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Synopsis

The nail plate is frequently affected by traumatism that can be post-traumatic, occupational or self-induced. Among the self-induced nail disorders a psychiatric counselling must be sometimes considered. These include the "median dystrophy", the "Heller's canaliform dystrophy", the "onychophagy" and the "onychotillomania".

The post-traumatic onychodystrophies include traumas of the pterigium, subungual haematomas, "melanonychia striata", "ingrown nail", "pincer nail" and "onychogriphosis". Lastly, there are occupational onychodystrophies, including "onychoschizia" or "brittle nails", "koilonychia", "chronic paronychia" and "onycholysis".

Riassunto

Le unghie sono frequentemente colpite da traumi di varia origine. Questi possono essere chirurgici, accidentali, professionali o auto-provocati. Tra le patologie ungueali auto-provocate deve spesso essere preso in considerazione un consulto psichiatrico. Tra queste patologie si rilevano la "distrofia mediana", la "distrofia canaliforme di Heller", la "onicofagia" e la "onicotillomania".

I traumi, chirurgici o accidentali, provocano fissurazioni dello pterigio, ematomi subungueali, "melanonichia striata", "unghia incarnita", "unghie a pinza" e "onicogrifosi". Infine, ricordiamo le patologie ungueali da cause professionali, tra cui "fragilità ungueale" o "onicoschizia", "coilonichia", "perionissi cronica" e "onicolisi".

The nail plate is frequently affected by traumas of different origin and due to its slow growth rate, signs of previous traumas remain on the nails for several months.

SELF-INDUCED NAIL DISORDERS

1. Median dystrophy

This is a very common nail plate disorder, occurring on the thumb or, less frequently, on the second finger of one or both hands (Fig.1). Median dystrophy is usually caused by repeated self-induced damage caused by the patient who makes a pressure on the base of the nail with the index finger of the same hand. Clinically, the nail plate shows a central longitudinal depression, crossed by small transversal lines (1). Occasionally, the dystrophy acquires a darkish colour due to deposition of exogenous material. The cuticle is often damaged or lost. The treatment requires the cooperation of the patient,

who must stop the habit of pressing and pushing back the cuticle. In case of paronychia, twice daily application of timolol 4% in chlorophorm lotion can be beneficial.

2. Heller's canaliform dystrophy

Heller's canaliform dystrophy is localized on the thumb of one or both hands and can also be considered a traumatic condition.

The longitudinal dystrophy is much deeper and depressed and reaches the distal portion of the nail, forming a kind of "point of an arrow" or "Christmas tree" (2). Sometimes a characteristic enlargement of the lunula is observed, probably due to the continuous trauma in the matrix area. This disorder can heal spontaneously, but relapses are frequent.

3. Onychophagy

Onychophagy or nail-biting is one of the most fre-



Fig. 1. Self-induced median dystrophy

quent causes of nail alterations. Onychophagy leads to the progressive disappearance of the nail plate with exposure of the hyponychium and nail bed. Moreover, the continuous trauma can be the cause of acute paronychia as well as periungual warts and pyogenic granulomas.

In very severe cases a striated melanonychia can be encountered, caused by the post-traumatic activation of the nail matrix melanocytes. In children, onychophagy must be considered paraphysiological and tends to disappear after puberty. When persists during adulthood, onychophagy has no favorable prognosis and may require psychiatric counselling (3-4).

4. *Onychotillomania*

This pathology can be the symptom of a severe psychiatric disorder. The nail alterations are different depending on the modality and the instruments utilized by the patient (Fig.2). The repeated traumas

often cause haemorrhages of the nail bed and, sometimes, haematomas. Erosions, ulcerative lesions and atrophic scars may be observed. Sometimes, the matrix injury is so dramatic that onychotillomania is indistinguishable from other onychodystrophies, such as nail lichen planus. Usually the patient refuses to admit that the damage is self-induced (4-6).

POST-TRAUMATIC ONYCHODYSTROPHY

Traumatic insults to the nail matrix often cause a permanent onychodystrophy. When the matrix is diffusely affected, the nail plate can be totally or partially absent.

1. *Fissuration, haematomas, melanonychia*

A chronic distal nail matrix trauma causes a fissu-



Fig. 2. *Onychotillomania*

ration of the open margin of the nail plate. When the trauma is acute, it provokes a subungual haematoma. In this case, a blood drain is useful to avoid matrix compression.

The subungual haematomas are different from those in other cutaneous areas, because the blood accumulates in the deepest nail plate layers.

This explains why the haematomas are progressively eliminated with nail growth.

Rarely, a very severe trauma can cause a partial nail bed amputation, so that the distal nail plate has an overcurvature on the bed, which appears shorter than normal. Toenails can also be affected by traumatic diseases. These traumatismms can be caused by the use of tight shoes, high-heeled shoes or tennis-shoes, but very often there is a preexisting natural predisposition.

While walking, the repeated pressure on the toenail causes a traumatic onycholysis, which is usually bilateral, and often colonized by fungi and/or bacteria.

The treatment includes avoidance of trauma and topical application of antiseptic ointments on the nail bed, after the mechanical avulsion of the damaged portion of the nail plate. Several foot malformations can produce overlapping of the toes with lateral onycholysis or friction melanonychia (Fig.3) due to the pressure (7-9).

2. Ingrowing nail

Ingrowing nail is most frequently seen in young adults, especially males. This condition usually affects the great toenail and may be bilateral.

Ingrowing toenail is most frequently caused by the congenital malalignment of the big toenail (10). Other predisposing factors are hyperhidrosis, abnormally long toes, congenital excessive convexity of the nails and/or hypertrophic lateral nail fold.

This problem can be inherited as an autosomal dominant trait. In this condition, the edge of the nail plate forms spicules that penetrate into the lateral nail fold



Fig. 3. Friction melanonychia

epithelium, provoking a foreign body inflammatory reaction. The lateral nail fold is painful and shows erythema and swelling.

At a second stage, a pseudopyogenic granuloma and a xeropurulent exudation may be observed. In the most severe cases, the nail fold becomes hypertrophic and partially covers the nail plate (11).

The granulation tissue can be reduced by application of a topical steroid. The embedded spicula should always be removed. It is then useful to place nonadsorbent cotton beneath the nail plate to elevate its lateral edge.

When the condition is recurrent, a chemical avulsion of the lateral matrix is advisable, using 85% aqueous phenol solution.

3. Pincer nails

In pincer nails there is a pronounced transverse overcurvature of the nail plate of the great toenail that compresses the lateral margins on the nail bed. This

onychodystrophy causes considerable pain. It is usually of traumatic origin due to pressure from inadequate shoes or subungual exostosis (12-13).

4. Onychogriphosis

In onychogriphosis one side of the nail matrix grows quicker than the other.

This asymmetric nail growth creates an overcurvature of the nail plate backwards to the nail bed portion where the nail grows more slowly. The nail becomes very hard, yellow in colour and may be crossed by numerous transversal furrows. The nail bed is always hyperkeratotic.

Onychogriphosis affects the toenails, most commonly the big toe. This disorder is usually encountered in elderly patients, affected by peripheral vascular diseases or podiatric alterations.

The treatment of onychogriphosis is conservative, with chemical avulsion of the nail plate and a periodical pedicure (14).

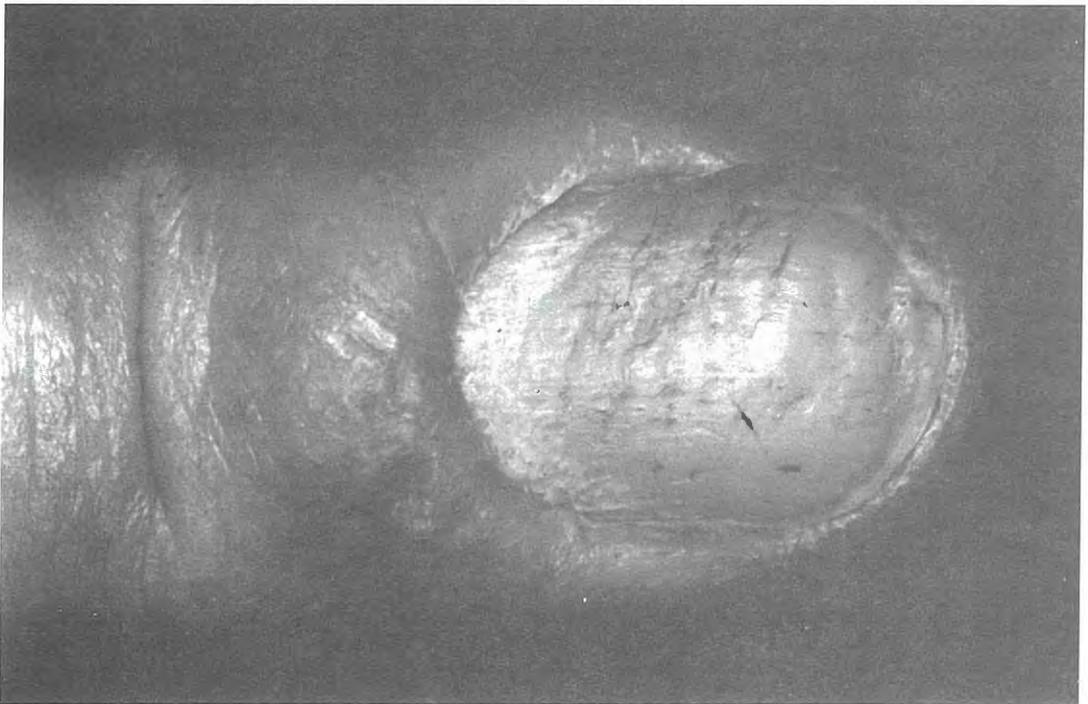


Fig. 4. Chronic paronychia

OCCUPATIONAL ONYCHODYSTROPHIES

1. Nail brittleness

Nail fragility is an environmental disorder. The frequent immersion of the hands in water and the contact with detergents, alkalis or solvents produces nail dehydration and brittleness. Most commonly the nail plate shows "onychoschizia" with progressive exfoliation of the superficial layers.

Oral biotin 5 mg/daily improves nail brittleness (15).

2. Koilonychia

In koilonychia the nail shows a spoon-shaped appearance. This condition is a consequence of nail plate thinning and may be due to occupational causes or be a consequence of iron deficiency.

3. Chronic paronychia

Paronychia (Fig.4), the chronic inflammation of the periungual tissue, generally begins with the traumatic elimination of the cuticle due to manicure or maceration. This permits penetration of microorganisms and/or irritative agents under the proximal nail fold. As a consequence, microbial agents, including yeasts (*Candida albicans*) and bacteria (*Pseudomonas aeruginosa*, *Proteus mirabilis*, *Proteus morgani*, *Escherichia coli* and *Staphylococcus spp.*) are frequently isolated.

In some cases, chronic paronychia may be the consequence of an immediate hypersensitivity reaction to food allergens. Clinically, the periungual tissues show erythema and swelling. This is frequently associated with superficial nail plate alterations, due to injury of the proximal portion of nail matrix.

The treatment consists of isolation and elimination of predisposing factors, including traumatic cosmetic treatments. Cortisomic creams are helpful,



Fig. 5. Idiopathic onycholysis

but only with good protective habits by the patient (11, 16-17).

4. Onycholysis

Onycholysis is the separation of the nail plate from the nail bed at the distal or lateral margins (Fig.5). The nail plate is white-coloured due to air penetration, whereas a *Pseudomonas spp.* colonization, following the onycholysis, can give a yellow-green appearance. One or more nails may be affected and usually the condition is idiopathic. Sometimes it can be a feature of systemic disorders or the side effect of drug agents. In the case of traumatic onycholysis due to pressure from footwear, the toe nails can also be affected, although onycholysis is usually seen in finger nails. Idiopathic onycholysis may be frequently observed in housewives, as a consequence of the frequent immersion of the hands in water and the contact with detergents and solvents (18-19).

Onycholysis may be encountered in nail psoriasis, where it is associated with other typical features of this dermatosis, including pitting, discolouration, splinter haemorrhages and oily spots (20).

Onycholysis is also the first sign of onychomycosis. Differential diagnosis, if only one finger is affected, must be made also with subungual tumours.

Treatment consists of removing the damaged portion of nail plate and the application of antibiotic creams to avoid colonization by microorganisms.

Photoonycholysis is an uncommon condition occurring after the ingestion of phototoxic drugs, such as tetracyclines, and as a complication of PUVA therapy (21).

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