



Retronychia: A Common and Misdiagnosed Condition

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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Case Study

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ABSTRACT

We report the case of two patients who consulted because of yellowing and thickening of their toe nails, with several relapses throughout time. Hand nails were unaffected. Both patients presented negative potassium hydroxide test and fungus culture, which excluded a diagnosis of onychomycosis. Further examination showed signs of trauma and growth of several overlapping nail plates, which lead to the diagnosis of retronychia, a common but misdiagnosed condition. We aim to emphasise the clinical aspects and possible treatments available for these types of cases.

Keywords: Retronychia; nail; paronychia; onycholysis.

1. INTRODUCTION

Retronychia refers to the embedding of the proximal edge of the nail plate into the proximal nail fold. This painful condition, first described in 1999 by De Berker and Renall [1], is characterized by interrupted nail growth, persistent paronychia, xanthonychia, nail thickening, proximal nail plate elevation. It may also lead to the growth of several nail plates, misaligned beneath each other. This condition is mainly caused by footwear-related trauma that leads to onycholysis, the major pathogenic mechanism for the appearance and maintenance of retronychia [2]. Even though diagnosis is clinical, it may be challenging to achieve due to the similarity with other diseases. These include onychomycosis or cronic paronychia. Although it may probably be a common condition, only few cases have been reported in the literature. We report the clinical features of two patients with retronychia.

2. CASE PRESENTATION

2.1 Case 1

A 21-year-old woman, with no relevant pathological history, who consulted for the first

time at the age of 17 due to yellowing and thickening of the nail plate in both halluces. With the suspected diagnosis of onychomycosis, a mycological study was performed. Both the direct study and the culture study were negative.

Three years later she was referred to our Department of Dermatology with similar nail lesions, added to paronychia at that time. A new study of superficial mycoses was performed, with negative results. In a subsequent control, physical examination showed thickening of the nail plate, and an interrupted growth of overlapping nail plates in the hallux and the second toe of both feet. The rest of the nails had no alterations, and the skin was normal (Fig. 1). Upon interrogation, the patient reported that she performed running as a sport, twice a week.

Considering the history of trauma, negative mycological studies and clinical manifestations, the diagnosis of retronychia was reached, impressive to look like an early stadium and surgical treatment was indicated. A proximal avulsion of the hallux nails was performed without complications.

Thickening of the nail plate, xanthonychia and multiple generations of nail plate in the hallux and second toe (Case 1).



Fig. 1. Case 1

2.2 Case 2

A 32-year-old woman, who had consulted other institutions for thickening and yellowing of the nail plate, was referred to our Department of Dermatology with relapsing episodes of proximal paronychia of the halluces. Physical examination revealed a thickening and elevation of the proximal portion of the nail plate, yellowish discoloration, enamel remnants and interrupted growth of the nail plate of both halluces (Fig. 2). The rest of the nails of both feet and of the hands, were not affected (Fig. 3).

A negative potassium hydroxide test and fungus culture excluded a diagnosis of onychomycosis.

The patient reported playing hockey twice a week and wearing heels on a daily basis.

Based on the clinical manifestations, history of trauma, and the negative complementary studies, we concluded that the patient presented retronychia. Proximal avulsion of the nail of both halluces was indicated.

Both halluces show thickening and yellowing. The rest of the nails are intact.

Closer examination shows onycholysis, xanthonychia, enamel remnants, and interrupted growth of overlapping nail.



Fig. 2. Case 2



Fig. 3. Case 2

3. DISCUSSION

Retronychia is a painful condition that is probably underdiagnosed due to limited knowledge among dermatologists and the presence of diverse clinical manifestations. Therefore, it is usually unnecessarily treated with systemic antibiotics and antifungals [1,2]. This disease commonly

affects young adults, mostly women [3]. As the main cause is trauma, sport activities and the use of heels or ill-fitting shoes are important risk factors [4]. More prone to microtrauma, toenails are the most frequently affected by retronychia. Unilateral retronychia is more common than bilateral [5].

After trauma, several degrees of onycholysis occur. This is the major pathogenic event in the development of this condition, that leads to nail separation from the matrix and the nail bed, which no longer supports the nail's forward growth. Furthermore, it becomes subject to back and forth movements that constantly traumatize the proximal nail fold, causing chronic inflammation. The newly formed nail grows under the old one to which is partially attached, failing to move distally and pushing the old one up. As this process goes on, new nail plates overlap on each other [6].

Normally, when an old nail plate separates completely from the matrix, the newly formed plate grows under the old one and pushes it out. In retronychia, the old nail remains in the nail pocket and the new one pushes it up instead of out, increasing the nail thickness proximally [1].

The yellowing of the nails can be attributed to onycholysis and the accumulation of inflammatory exudate [1,7].

Two stages can be described in retronychia. A first stage, usually undiagnosed, characterized by an arrest in the nail plate's growth, accompanied by xanthonychia, presence of exudate under the proximal nail fold and discreet paronychia; and a late stage in which in addition to the aforementioned signs, intense paronychia and an important thickening of the nail plate can be observed. It's also common to find Beau's lines, subungual hyperkeratosis and hemorrhage, and distal onycholysis. The presence of clinical manifestations previously specifically added to negative fungus culture, are key criteria for diagnosis.

A non-invasive technique used in the study of retronychia is ultrasound imaging [8,9] that allows us to assess the anatomical changes present in this condition, as well as to rule out hidden complications and tumor entities. Ultrasonic findings usually present in retronychia are decrease in the distance between the origin of the nail plate and the base of the distal phalanx, multiple overlapping nail plates, decreased echogenicity or anechogenicity, and increased blood flow to the proximal fold and to the nail bed [10].

Differential diagnoses include chronic paronychia, onychocryptosis (embedding of the nail into the periungual lateral skin folds) [11], subungual cysts and tumors such as glomus

tumor, mixoid cyst, enchongroma and squamous cell carcinoma.

Proximal nail avulsion is considered the first line treatment for retronychia. It's an inexpensive, rapid and curative procedure that allows pain relief. Once the excision of the nail has been produced, the pain quickly subsides, and a new nail plate grows back normally [12]. Patients that refuse surgery can be successfully treated with topical steroids [13,14] or chemical avulsion with 50% urea and 10% salicylic acid in vaseline white petroleum, covered by occlusive dressing during a week [15]. Recurrences after surgical treatment are very rare [14].

4. CONCLUSIONS

Retronychia is a common condition, but given its diverse clinical presentations, diagnosis can be challenging. Relapses and negative fungal cultures are key to suspect the condition, as well as proximal thickening of the nail plate, xanthonychia and overlapping of several nail plates. Other factors that may raise suspicion include the type of shoes the patient wears, as well as sport practices that may generate nail trauma. Proximal nail avulsion is considered the first line treatment for retronychia, and recurrences after this approach are extremely rare.

CONSENT

As per international standard or university standard, participant's written consent has been collected and preserved by the author(s).

ETHICAL APPROVAL

It is not applicable.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

REFERENCES

1. Ventura F, Correia O, Duarte AF, Barros AM, Haneke E. Retronychia-clinical and pathophysiological aspects. *J Eur Acad Dermatol Venereo I.* 2016;30:16-19. Available:<https://doi.org/10.1111/jdv.13342>
2. Robledo A, Godoy E, Manrique E, Manchado P3. Retronychia: An

- underdiagnosed disease. *Dermatol Online J.* 2017;15:23.
3. Kim M, Kan JH, Cho BK, et al. Great toenail dystrophy: A single-center experience and review of the literature. *Korean J Fam Med.* 2015;36:113-120. Available: <https://doi.org/10.4082/kjfm.2015.36.2.113>
 4. Gerard E, Prevezas C, Doutre MS, Beylot-Barry M, Cogrel O. Risk factors, clinical variants and therapeutic outcome of retronychia: A retrospective study of 18 patients. *Eur J Dermatol.* 2016;1:26:377-81. Available: <https://doi.org/10.1684/ejd.2016.2774>
 5. Cabete J, Lencastre A. Recognizing and treating retronychia. *Int J Dermatol.* 2014; 54:51-52. Available: <https://doi.org/10.1111/ijd.12635>
 6. Sudy E, Ubina F, Wortsman X: Retronychia. *AJRDES.* 2018;1:1-9.
 7. Litaïem N, Drissi H, Zeglaoui F. Retronychia, Khachemoune A. Retronychia of the toenails: a review with emphasis on pathogenesis, new diagnostic and management trends. *Arch Dermatol Res;* 2019. Available: <https://doi.org/10.1007/s00403-019-01925-w>
 8. Fernández J, Reyes-Baraona F, Wortsman X: Ultrasonographic Criteria for Diagnosing Unilateral and Bilateral Retronychia. *J Ultrasound Med.* 2018, 37:1201-1209. Available: <https://doi.org/10.1002/jum.14464>
 9. Chang P, Rosales D: Retronychia. *Dermatol Rev.* 2018;57:264-266.
 10. Campos MA, Santos A. Retronychia: Clinical diagnosis and surgical treatment. *BMJ case;* 2017. Available: <https://doi.org/10.1136/bcr-2016-218758>
 11. Dahdah MJ, Kibbi AG, Ghosn S: Retronychia: report of two cases. *J Am Acad Dermatol.* 2008;58:1051-1053. Available: <https://doi.org/10.1136/bcr-2016-218758>
 12. Lencastre A, Lorizzo M, Caucanas M, Cunha N, et al Topical steroids for the treatment of retronychia. *J Am Acad Dermatol.* 2019;70:388-390. Available: <https://doi.org/10.1111/jdv.15603>
 13. Nouredine L, Haifa D, Faten Z, Amor K. <https://doi.org/Retronychia> of the toenails: A review with emphasis on pathogenesis, new diagnostic and management trends. *Arch Dermatol Res;* 2019. Available: <https://doi.org/10.1007/s00403-019-01925-w>
 14. Vastarella M, Annunziata MC, Panariello G, Ferrillo M, Fabbrocini G: A novel treatment for retronychia: Case Series. *J Dermatolog Treat.* 2019;20:1-5. Available: <https://doi.org/10.1080/09546634.2019.1592098>
 15. Berker DAR, Rendall JRS: Retronychia-Proximal ingrowing nail. *J Eur Acad Dermatol Venereol.* 1999;12:126. Available: <https://doi.org/10.1590/abd1806-4841.20187908>

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