

Subungual osteochondroma of the big toe: an uncommon presentation

Osteocondroma subungueal do hálux: uma apresentação incomum

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Abstract

Subungual osteochondroma is a rare benign bony tumor that typically affects the phalanges of the fingers or toes, most frequently the distal phalanx of the big toe. We report a new observation of a 15-year-old female who presented with a slowly growing mass beneath the nail of her right great toe, causing onychia and pain. Clinical and dermoscopic examination revealed an erythematous ulcerating tumor. Given these non-specific signs, pyogenic granuloma, osteochondroma, squamous cell carcinoma, and amelanotic melanoma were considered. Excisional biopsy confirmed osteochondroma, which was surgically removed, and a hydrocolloid dressing was applied. At 6-month follow-up, she showed lateral onycholysis and hyperkeratosis treated with urea cream, with no signs of recurrence.

Keywords: Dermoscopy. Nail tumor. Osteochondroma. Surgery.

Resumo

O osteocondroma subungueal é um tumor ósseo benigno raro que tipicamente afeta as falanges dos dedos das mãos ou dos pés, mais frequentemente a falange distal do hálux. Relatamos um novo caso de uma paciente de 15 anos que apresentou uma massa de crescimento lento sob a unha do hálux direito, causando oníquia e dor. O exame clínico e dermatoscópico revelou um tumor ulcerado eritematoso. Diante desses sinais inespecíficos, foram considerados os diagnósticos diferenciais de granuloma piogênico, osteocondroma, carcinoma espinocelular e melanoma amelanótico. A biópsia excisional confirmou o diagnóstico de osteocondroma, que foi removido cirurgicamente, e um curativo hidrocoloide foi aplicado. Após 6 meses de acompanhamento, a paciente apresentou onicólise lateral e hiperqueratose, tratadas com creme de ureia, sem sinais de recidiva.

Palavras-chave: Dermatoscopia. Tumor das unhas. Osteocondroma. Cirurgia.

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Introduction

Subungual osteochondroma is a rare benign bony tumor that typically affects the phalanges of the fingers or toes, most frequently the distal phalanx of the hallux.¹ It is a well-defined, and frequently painful, exophytic tumor that grows gradually over several months and may cause pain and deformity in the nails. It can lift and displace the overlying nail, revealing an exophytic mass with an ulcerated surface.² The appearance as ulcerative tumors is uncommon and can mimic other benign conditions, such as pyogenic granulomas, or malignant conditions, such as squamous cell carcinoma (SCC) and achromic melanoma. We present a case that highlights an unusual presentation of subungual osteochondroma.

Case presentation

A 15-year-old female presented with a mass on the tip of the right great toe, beneath the nail of 7 months duration. The mass was slowly progressive in size, to the extent that it has lifted the nail plate, causing onychia and pain. Clinical examination found an erythematous ulcerating tumor measuring approximately 30 mm in size, situated beneath the nail. The mass was non-tender, firm in consistency, and ulcerated with no restriction of movements of proximal and distal interphalangeal joints (Fig. 1A). Dermoscopy shows an erythematous background with irregular linear vessels and crusts (Fig. 1B). Given the patient's young age, the most likely diagnoses were pyogenic granuloma and osteochondroma; however, malignant tumors, particularly SCC and amelanotic melanoma, also had to be considered. X-ray of the foot revealed a bony growth on the dorsal aspect of the distal phalanx of the big toe. An excisional biopsy was performed, confirming the diagnosis of osteochondroma (Fig. 2). Then the tumor was excised under digital block using a ring tourniquet, and a hydrocolloid dressing was applied (Fig. 3). The patient was closely monitored for her care. She received light-emitting diode therapy sessions to optimize healing. The patient was evaluated at 6 months; the nodule subsequently resolved completely. She presented with lateral onycholysis and xanthonychia, which were treated with a urea-based cream, without any clinical or dermoscopic signs of recurrence (Fig. 4).

Discussion

Osteochondromas are the most common benign bone tumors, accounting for 10-15% of bone tumors in



Figure 1. Clinical images. **A:** erythematous ulcerated tumor measuring approximately 30 mm in size, situated beneath the nail. **B:** dermoscopy shows an erythematous background (cross) with irregular linear vessels (circle) and crusts (arrow).

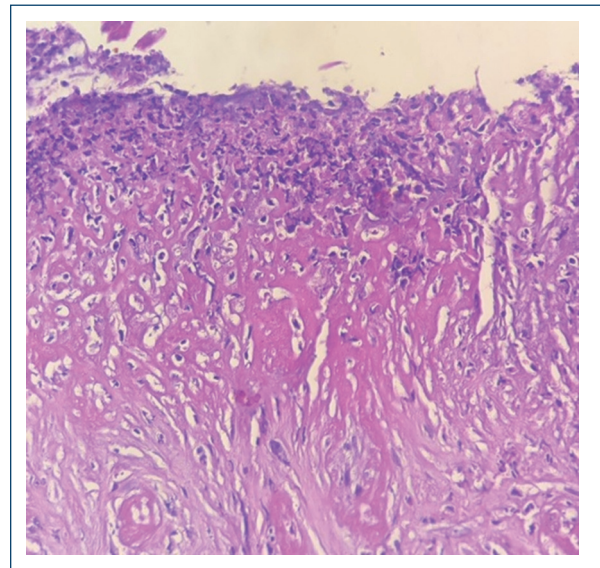


Figure 2. Ulcerated epidermis overlying a lesion composed of regular anastomosing bony trabeculae with hemorrhagic, fibrous medullary spaces and a cartilaginous cap showing endochondral ossification (H&E $\times 400$).

general. They occur most often in adolescents and young adults, aged 10-25 years, with a male predominance.³ Subungual osteochondroma is a relatively rare, benign osteocartilaginous tumor commonly seen in the distal phalanx of the big toe. However, other toes may be involved. Clinically, it appears as a firm or hard consistency small, pink colored nodule or tumor of variable size that projects beyond the free edge of the nail.



Figure 3. Application of a hydrocolloid dressing postoperatively.



Figure 4. Clinical images **A:** the 6-month follow-up revealed lateral xanthonychia, onycholysis of the big toe, **B:** with no clinical or dermoscopic signs of recurrence.

Sometimes it is painful and can extend beyond the free edge of the nail, causing deformation, with onycholysis or anonychia, as we see in our case.²

Heredity, long-term infection, chronic irritation, and trauma are thought to be related; however, none of these theories has been proven.⁴ The diagnosis is confirmed by radiographic and histologic evaluations. In fact, a standard radiograph of the foot reveals a pedunculated or sessile protuberance of trabecular bone tissue, composed of a cortical and medullary component, formed in the juxta-epiphyseal region of the distal phalanx, with which it is continuous, and generally oriented in the opposite direction of the interphalangeal joint. Histologically, the osteochondroma is made up of hyaline cartilage with cells arranged similarly to a normal growing epiphysis.⁵

Basically, osteochondroma can be confused with subungual exostosis, although several authors have proposed it as a variant of osteochondroma, they are considered as different pathologies. Subungual exostosis is generally secondary to trauma. It affects the distal part of the phalanx and is most often acquired at the age of 20-30 years, but the definitive diagnosis will always be established by a histological report, which shows peripheral fibrocartilaginous tissue with an underlying stalk composed of trabecular bone, which is attached to the underlying bone.⁶ Our patient was young and presented with an ulcerated, budding tumor with anonychia, an unusual form that can be confused with other differential diagnoses, notably pyogenic granuloma. It presents as a single, rapidly growing papule or polyp that bleeds easily after minor trauma. According to Zaballos, dermoscopy reveals homogeneous reddish areas, a white collarette, white streaks, and ulcerations. No bluish, brown, or black pigmentation is observed.⁷

It is important to rule out malignant tumors such as SCC and amelanotic melanoma, although the patient's age was not suggestive of these diagnoses. Indeed, SCC occurs more frequently in men after the fifth decade of life and is typically limited to a single digit. The presenting symptoms of SCC include pain, purulent drainage, bleeding, nail plate dyschromia, nail deformity, paronychia, and ulceration. Dermoscopic criteria of SCC include keratin accumulations, scaling, blood spots, white circles, white structureless zones, and perivascular white halos; however, these signs are not pathognomonic for SCC. Therefore, a definitive diagnosis of subungual SCC is established by biopsy.^{8,9} As for achromic melanoma, it can also mimic subungual osteochondroma, but it manifests as a rapidly growing, ulcerated nodule. Pigmentation of the surrounding nail tissue, known as Hutchinson's sign, along with nail elevation, is suggestive of melanoma. However, sometimes these lesions may lack pigmentation and appear relatively benign. Dermoscopy of achromic melanoma is non-specific, showing diffuse milky-red areas, atypical vessels, an irregular peripheral border of brown-black pigmentation, and ulceration.^{10,11}

Surgical excision is the gold standard for treating osteochondroma. Excision usually involves the use of digital block anesthesia. A recurrence rate of 5–11% may result from incomplete surgical excision. However, no cases of malignant change have been reported.¹²

Conclusion

Subungual osteochondroma should remain an important consideration when assessing slowly progressive ulcerated nail-unit masses in adolescents. This case underscores the importance of integrating clinical, dermoscopic, and radiologic evaluations to refine the differential diagnosis and guide appropriate management.

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Conflicts of interest

None.

Ethical considerations

Protection of human subjects and animals. The authors declare that no experiments on humans or animals were performed for this research.

Confidentiality, informed consent, and ethical approval. The authors have followed their institution's confidentiality protocols, obtained informed consent from all patients, and secured approval from the Ethics Committee. SAGER guidelines have been followed as applicable to the nature of the study.

Declaration on the use of artificial intelligence.

The authors declare that no generative artificial intelligence was used in the writing or creation of the content of this manuscript.

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