

Subungual Nail Pigmentation and Malalignment of the Great Toe Nail in a Cancer Patient - A Diagnostic Challenge

Uwe Wollina^{1*}, Georgi Tchernev²

¹*Biological Department of Dermatology and Allergology, Municipal Hospital Dresden, Academic Teaching Hospital of the Technical University of Dresden, Friedrichstrasse 41, 01067 Dresden, Germany;* ²*Department of Dermatology, Venereology and Dermatologic Surgery, Medical Institute of Ministry of Interior, and Onkoderma Polyclinic for Dermatology and Dermatologic Surgery, Sofia, Bulgaria*

Abstract

Subungual pigmentation may have a variety of underlying pathologies, but clinicians should consider malignancies such as subungual melanoma or metastasis, even if they are not common. A delayed diagnosis can dramatically worsen the prognosis. Therefore, histologic examination is highly recommended. We present a 75-year-old female cancer patient presenting with subungual blackish pigmentation of the great toe nail for several years suspicious of a subungual melanoma even by dermoscopy. Nail avulsion and histological investigations excluded melanoma. The final diagnosis was subungual hematoma with growth malalignment of the great toe nail.

Citation: Wollina U, Tchernev G. Subungual Nail Pigmentation and Malalignment of the Great Toe Nail in a Cancer Patient - A Diagnostic Challenge. Open Access Maced J Med Sci. 2017 Jul 25; 5(4):467-469. <https://doi.org/10.3889/oamjms.2017.084>

Keywords: Nail apparatus; subungual pigmentation; cancer; melanoma; hematoma.

***Correspondence:** Uwe Wollina, Biological Department of Dermatology and Allergology, Municipal Hospital Dresden, Academic Teaching Hospital of the Technical University of Dresden, Friedrichstrasse 41, 01067 Dresden, Germany. E-mail: wollina-uw@khd.de

Received: 30-Mar-2017; Revised: 21-Apr-2017; Accepted: 23-Apr-2017; Online first: 20-Jul-2017

Copyright: © 2017 Uwe Wollina, Georgi Tchernev. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial 4.0 International License (CC BY-NC 4.0).

Funding: This research did not receive any financial support.

Competing Interests: The authors have declared that no competing interests exist.

Introduction

Subungual pigmentation has a variable underlying pathology. The most common cause is subungual hematoma followed by infections of the nail apparatus. Vascular diseases including tumours and malformations represent important differential diagnoses [1].

It is most important not to overlook malignancies. Subungual metastases are uncommon. They most frequently occur in patients with primary malignant tumours of the lung (41%), genitourinary tract (17%), or breast (9%) [2].

Subungual melanoma is part of the acrolentiginous subtype with a worse prognosis due to diagnostic delay [3]. Subungual melanoma is the most

common type in Asians, where melanoma is uncommon, while it is rare in Caucasians, where melanoma is raising [4]. Hutchinson's sign, i.e. the periungual extension of brown-black pigmentation from melanonychia onto the nail folds, is an important clinical indicator of subungual melanoma. Nevertheless, it is neither highly specific nor sensitive enough to confirm or exclude subungual melanoma [5, 6].

Case report

A 75-year-old female patient was referred to our department with a subungual hyperpigmentation of the right great toe nail suspicious of subungual

melanoma. She did not remember any recent trauma. The pigmentation had been there for a couple of years.

Her medical history was remarkable for a malignant mixed Mullerian tumour of the uterus T2, N1, L1, V0, R0 (FIGO Stage IIIc) surgically removed followed by brachytherapy three years ago. Afterwards, she developed a secondary lymphedema stage II of the legs. She suffered from arterial hypertension and rheumatoid arthritis.

On examination, we observed a dark blackish subungual pigmentation of the proximal lateral part of the right great toenail (Fig. 1). The nail plate was thickened in the lateral part and yellowish separated by Beau's line from the proximal part. There was a deviation of the long axis of the nail plate laterally, i.e. growth malalignment of the great toenail, not obvious on the contralateral foot. Stemmer's sign was positive on the toes due to chronic lymphedema of the legs. Dermoscopy was performed, but melanoma suspicion remained. The pigmentation was not homogeneous, globules were missing, and the distal margins were blurred.



Figure 1: Subungual pigmentation, Beau's line and growth malalignment of the great toe nail associated with lymphedema

Diagnostic ultrasound excluded lymph node enlargement of the groins.

We performed a nail avulsion for diagnostic purposes. After Oberst's regional anaesthesia with 1% prilocaine, the nail elevator was introduced beneath the distal margin of the nail plate. The nail plate was separated from the hyponychium and the nail bed towards the proximal nail matrix. We performed a cut of the proximal nail fold and prepared laterally on each side two skin flaps to ensure a complete examination of the matrix. After that, the complete nail plate and nail matrix were removed (Fig. 2). By the naked eye, the bottom of the nail plate seemed almost free of pigment. The nail bed was completely free of pigmentation. Therefore, nail bed biopsy was omitted. The matrix zone was coagulated by bipolar pincer. The proximal flaps were sutured. A disinfectant

ointment was applied, and the great toenail was covered by a sterile dressing. Wound healing was unremarkable.

Histologic evaluation of the nail plate excluded a pigmentary tumour but confirmed hematoma. Prussian blue stain for iron was positive.

Eventually, the following diagnosis was confirmed: Subungual hematoma of the great toenail in the case of malalignment of the great toe nail and rheumatoid arthritis.



Figure 2: After complete nail avulsion, the nail bed was completely free of hyperpigmentation

Discussion

A subungual hematoma is common. It is an important differential diagnosis of subungual melanoma. The ABCD rule for melanoma has a low sensitivity and specificity for this melanoma subtype [3]. Dermoscopy may be helpful, but in cases of thickened nail plates, its value remains limited [7]. On the other hand, subungual melanoma may also imitate subungual hematoma [8]. Subungual melanoma has a poor prognosis due to delayed diagnosis. Therefore, every unclear subungual pigmentation needs a histologic evaluation [1].

In the present case, the patient suffered from secondary lymphedema after treatment of a malignant mixed Mullerian tumour of the uterus and rheumatoid arthritis. Lymphedema and rheumatoid arthritis may have contributed to the yellowish colour of the nail plate causing a yellow nail syndrome [9, 10].

Growth malalignment is either a congenital disease caused by desynchronization of growth between the nail and the adherent end-phalanx of the hallux resulting in temporarily larger nail plates, which are gliding laterally, to fit into the underlying bony space [11, 12]. Acquired growth malalignment of the great toe nail can also be a consequence of trauma [13].



Figure 3: The removed nail (bottom view) with remarkable thickening of the nail plate but without marked pigmentation

The patient had worked in a brewery where she used to move the beer boxes with her feet causing repeated trauma to the nail apparatus of the great toe nail. In consequence, Beau's line may have evolved [14]. The secondary changes of the nail plate were responsible for the limited benefit of dermoscopy to confirm hematoma. If dermoscopy had been suspicious for subungual hematoma, we would have performed a punch biopsy only. But in this case, we decided to perform nail avulsion.

In conclusion, the subungual hematoma is a possible imitator for subungual melanoma. In any case of suspicious subungual pigmentation, diagnosis needs to be confirmed by histology without unnecessary delay [1].

References

1. Wollina U, Nenoff P, Haroske G, Haenssle HA. The diagnosis and treatment of nail disorders. *Dtsch Arztebl Int.* 2016;113:509-518. PMID:27545710
2. Cohen PR. Metastatic tumors to the nail unit: subungual metastases. *Dermatol Surg.* 2001;27:280-293. <https://doi.org/10.1097/00042728-200103000-00014>
3. Tronnier M, Semkova K, Wollina U, Tchernev G. Malignant melanoma: epidemiologic aspects, diagnostic and therapeutic approach. *Wien Med Wochenschr.* 2013;163:354-358. <https://doi.org/10.1007/s10354-013-0207-3> PMID:23715934
4. Kim SY, Yun SJ. Cutaneous melanoma in Asians. *Chonnam Med J.* 2016;52:185-193. <https://doi.org/10.4068/cmj.2016.52.3.185> PMID:27689028 PMID:PMC5040767
5. Baran R, Kechijian P. Hutchinson's sign: a reappraisal. *J Am Acad Dermatol.* 1996;34:87-90. [https://doi.org/10.1016/S0190-9622\(96\)90839-7](https://doi.org/10.1016/S0190-9622(96)90839-7)
6. Tchernev G, Chokoeva AA, Wollina U, Lotti T. Persistent subungual and periungual hematoma versus melanoma: to cut it or to leave it? *Dermatol Ther.* 2016;29:150-151. <https://doi.org/10.1111/dth.12293> PMID:26333508
7. Mun JH, Kim GW, Jwa SW, Song M, Kim HS, Ko HC, Kim BS, Kim MB. Dermoscopy of subungual haemorrhage: its usefulness in differential diagnosis from nail-unit melanoma. *Br J Dermatol.* 2013;168:1224-1229. <https://doi.org/10.1111/bjd.12209> PMID:23302009
8. Deinlein T, Hofmann-Wellenhof R, Zalaudek I. Acral melanoma mimicking subungual hematoma. *J Am Acad Dermatol.* 2016;75:e181-e183. <https://doi.org/10.1016/j.jaad.2016.02.1222> PMID:27745646
9. Chaniotakis I, Bonitsis N, Stergiopoulou C, Kiorpelidou D, Bassukas ID. Dizygotic twins with congenital malalignment of the great toenails: reappraisal of the pathogenesis. *J Am Acad Dermatol.* 2007;57:711-715. <https://doi.org/10.1016/j.jaad.2007.05.033> PMID:17692994
10. Kaatz M, Wenzel H-C, Trebing D, Barta U, Wollina U. Yellow-Nail-Syndrom. *Med Welt.* 1997;48:501-503.
11. Mishra AK, George AA, George L. Yellow nail syndrome in rheumatoid arthritis: an aetiology beyond thiol drugs. *Oxf Med Case Reports.* 2016;2016:37-40. <https://doi.org/10.1093/omcr/omw013> PMID:26989491 PMID:PMC4794558
12. Decker A, Scher RK, Avarbock A. Acquired congenital malalignment of the great toenails. *Skin Appendage Disord.* 2016;1:147-149. <https://doi.org/10.1159/000441391> PMID:27171597 PMID:PMC4857820
13. Wollina U, Wollina K. Growth malalignment of the great toenails - A cause of chronic relapsing paronychia in infants. *Z Hautkrankh.* 1995;70:35-37.
14. Braswell MA, Daniel CR 3rd, Brodell RT. Beau lines, onychomadesis, and retronychia: A unifying hypothesis. *J Am Acad Dermatol.* 2015;73:849-855. <https://doi.org/10.1016/j.jaad.2015.08.003> PMID:26475537