Periungual Osteoma Cutis – A Rare Occurrence

Dear Editor,

Osteoma cutis (OC) is a rare benign entity that involves new bone formation (membranous ossification) within the cutaneous or subcutaneous tissue. It can either be primary OC (POC) or secondary OC. Primary being idiopathic can be present in association with Albright's hereditary osteodystrophy. New bone formation in secondary OC occurs as in pre-existing inflammatory diseases, namely, systemic sclerosis, CREST syndrome, dermatomyositis, acne scar, trauma, and tumors. OC most commonly affects the face. It can also involve the scalp, trunk, extremities, and buttocks. There are few case reports on OC lesions on the foot that can mimic verruca plantaris and may present with heel pain.[1] Periungual location of

Table 1: Differential diagnosis of periungual osteoma cutis

Entity	Age/sex	Clinical presentation	Histopathology	x-ray finding	Dermoscopic features
Fibrous osseous pseudotumor of the digit (FOPD)	Young adults Women >men	Localised erythematous, painful, subcutaneous swelling on proximal phalanx of digit, most commonly on index finger	Typical and atypical fibroblasts, osteoblasts and trabeculae of bone with variable degrees of maturation	Ill-defined soft tissue mass with focal calcification	Non-vascular lesion and white spots are seen which indicates scarring.
Acquired digital fibrokeratoma	4th decade. Men >Women	Asymptomatic, smooth, dome-shaped, flesh-colored papule or nodule on fingers and toes	The epidermis is orthokeratotic, hyperkeratotic, papillomatous, and acanthotic. The dermis is packed with thick collagen bundles that are arranged parallel to the axis of the tumor	-	A central homogeneous pale-yellow core fringed by a hyperkeratotic white scaly collarette are seen.
Subungual osteochondroma	Adolescents and young adults. Men >women (2:1)	Firm solitary nodule, with or without associated nail plate deformity. Can either be asymptomatic or associated with pain on distal phalanx of fingers and toes	Hyaline cartilage cap with a high number of chondrocytes, unlike subungual exostosis in which the cap is composed of fibrocartilage	Radio-opaque mass on distal phalanx with juxta-epiphyseal protuberances, in proximity with the metaphyseal area, differentiating from subungual exostosis	A yellowish-brown hyperkeratotic protuberance surrounded by a collarette of scales
Subungual exostoses	Children and young adults. Women=men	Painful, firm, fixed nodule with a hyperkeratotic smooth surface at the distal end of the nail plate. (Toes >fingers)	Trabecular bone formation at the basement layer and a proliferating fibrocartilaginous cap.	Pedunculated radio-opaque mass on dorsomedial surface of the distal phalanx. Protuberances lack clear continuity of both the medullary cavity and cortex	A sharply circumscribed yellow spot, can be seen under the nail plate which corresponds to hyperkeratosis.
Onycholemmal horn	-	Hard, exophytic painless growth at the edge of the nail bed, with the potential to extend into the nail grooves.	Abrupt transformation of the keratinocytes into lamellar keratin without the formation of a true granular layer	-	keratotic cylindrical projection and multiple longitudinal fissures of the nail plate and partial anonychia may be seen
Acral angiostoma cutis	12 – 72 years with a female predominance	Ulcerative, erythematous, dome-shaped subungual papule resembling pyogenic granuloma on acral skin. (Toes >fingers).	Well-formed capillaries, pale stroma, bland fibroblast-like cells, and multiple tiny spicules of woven bone. However, there is no lobular pattern in the capillary proliferation, which is a typical histopathological feature in pyogenic granuloma.	-	-

OC is rare and has not been reported. We report a rare case of periungual OC with its onychoscopic features in an Indian female.

A 30-year-old female presented to the dermatology OPD with the complaint of a slowly enlarging solid nodule present on the lateral aspect of right index finger. A small lesion was noticed by the patient 8 years ago which gradually progressed to the current size, extending from the base of right lateral nail fold to the free edge of the nail plate. There was no history of any trauma, raised temperature, and pain at the local site. There was no evidence of preceding tumour, paronychia, parathyroid disease, autoimmune connective tissue disease, Albright's hereditary osteodystrophy, and diabetes in the patient. There was no family history of similar skin lesions. Familial occurrence of the lesions has been found in generalized or widespread OC.[2]

Cutaneous examination showed a single pink to white-colored nodule of size 0.5 cm × 1.2 cm present on the right lateral aspect of nail plate running parallel along the base to the free edge of nail plate. On palpation, local temperature was normal. Lesion was nontender and hard in consistency [Figure 1a]. Onychoscopy (DermLite DL4, 10X) revealed a single whitish-pink structure less area with arborizing telangiectasias, and yellow-white collarette of scales on the surface [Figure 1b]. On the basis of history, examination and onychoscopy differential diagnoses of fibrous osseous pseudotumor of the digit (FOPD), OC, acquired digital fibrokeratoma, subungual osteochondroma, subungual exostoses, onycholemmal horn, and acral angiostoma cutis were kept. The details of the following differential diagnosis have been given in Table 1. Complete blood count, renal function tests, and liver function tests were unremarkable. Serum levels of calcium, phosphate, vitamin D3, and parathormone were normal. X-ray of the right hand (anterior-posterior view) revealed smooth concave bean shaped ossification and bone erosion leading to concavity in the distal phalanx of right index finger, overlying the soft tissue with mild soft tissue swelling [Figure 2]. Visualized bone appeared normal in density. Soft tissue was normal. Joint space was normal. Punch biopsy was done [Figure 3]. Histopathological examination showed a well-circumscribed lesion present in the subcutaneous plane. Multiple spicules and lamellar fragments of mature osteoid matrix with interspersed loose fibrous stroma were identified [Figure 4a-c]. Focal osteoblastic rimming was noted. No hematopoietic elements were observed. A diagnosis of osteoma cutis was confirmed.

OC usually appears as solid, skin to pink colored subcutaneous nodules of varying sizes and shapes with or without signs of inflammation. Face is a common site of predilection with differentials such as epidermoid cysts, fibromas, and lipomas.[3] Approximately 85% of OC arises as a result of long-standing acne vulgaris. This could explain

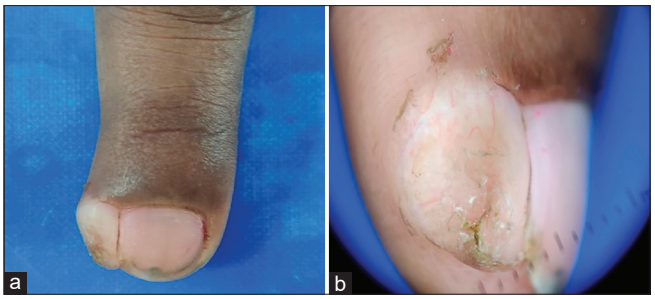

Figure 1: (a) Clinical image showing a single pink to white colored nodule of size 0.5 cm × 1.2 cm present on the right lateral aspect of nail plate running parallel along the base to the free edge of nail plate of right index finger; (b) Onychoscopy revealing a single whitish pink, nodule of size 0.5 cm × 1.2 cm, along with structure less area, multiple telangiectasias, and yellow- white scales on the surface (DermLite DL4,10X)

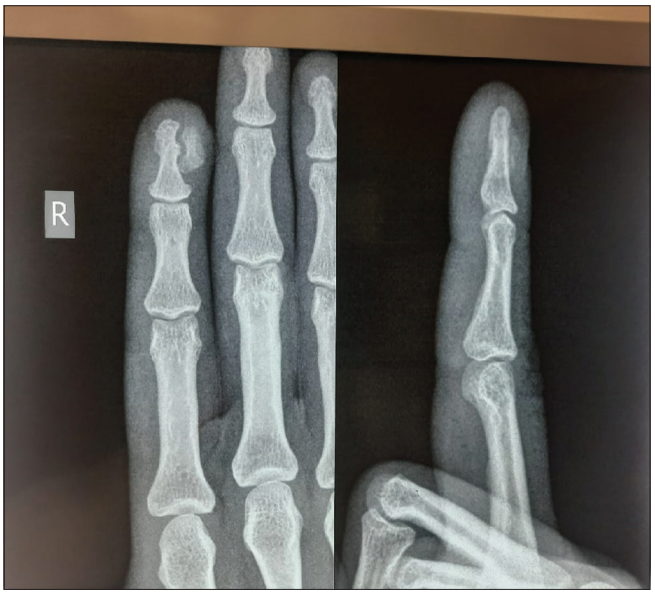

Figure 2: Xray (PA view) showing a smooth concave bean shaped ossification and bone erosion leading to concavity in the distal phalanx of right index finger along with overlying soft tissue swelling

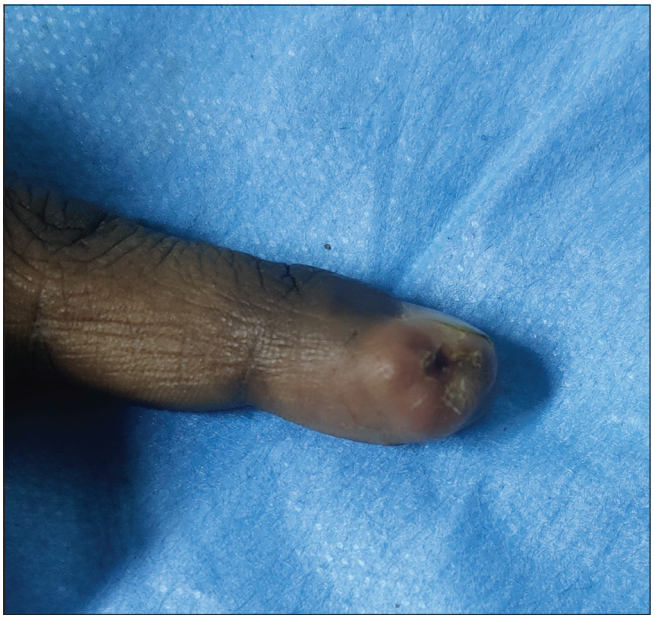

Figure 3: Clinical image of lesion 2 weeks after the punch biopsy

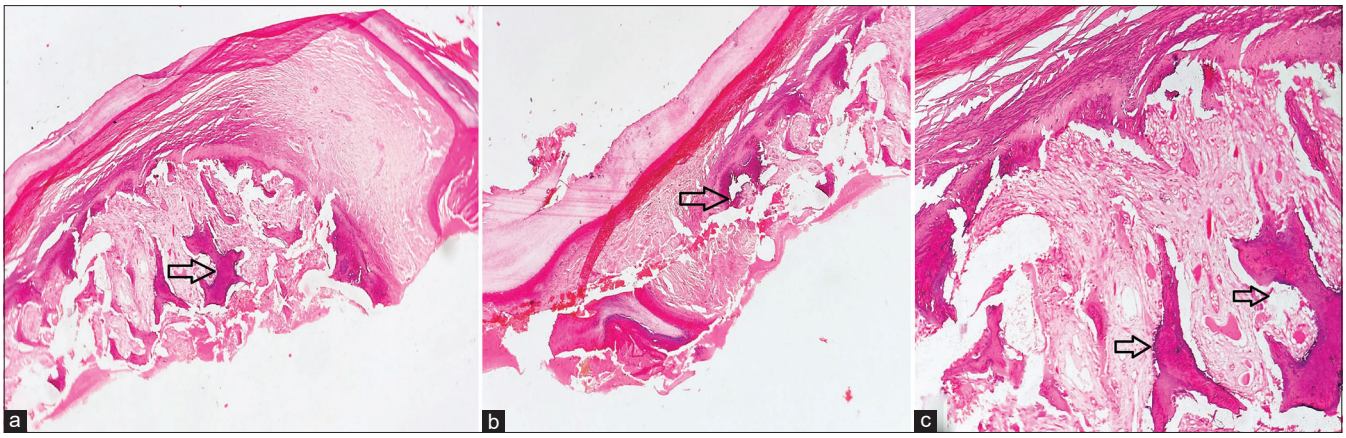

Figure 4: (a-c) A well-circumscribed lesion in the subcutaneous plane comprising of lamellar fragments of mature osteoid matrix (arrows) with interspersed loose fibrous stroma (H and E 40x, 100x)

the common sites of OC that is face in females and scalp or chest in males.[4] In this case, osteoma cutis was present on an unusual site (periungual location). OC can be either primary (idiopathic) or secondary when it is associated with chronic inflammatory diseases leading to degradation of collagen fibers, trauma, and neoplasms.[3] POC is a rare entity that may occur in isolation or in association with a syndrome such as Albright hereditary osteodystrophy, fibrodysplasia of progressive ossification, osseous progressive heteroplasia, and platelike OC.[5] POC is categorized as multiple miliary osteomas of the face, isolated osteoma, widespread osteoma, and congenital plaque-like osteoma.[6] This was a case of an isolated POC, which is a rare presentation. The pathogenesis of formation of OC has not been fully understood. Two theories have been proposed.[5] First theory is based on the migration of osteoblasts to the skin. The second theory is more widely recognized and is based on the metaplasia of fibroblasts to osteoblasts. Dermoscopy of facial OC includes concentric white and yellowish structures with an erythematous border area.[7] The typical dermoscopic features of a plaque-like OC has been described by Romero *et al*.,[7] which includes concentric structures arranged in a linear fashion with an erythematous border. However, to the best of our knowledge, the typical dermoscopic aspects of other types of primary OC are not well established.[3] Our case elaborates the dermoscopic findings of POC. OC is non-life threatening condition with excellent prognosis as recurrence after the surgical excision of these lesions has not been reported.[8] Complications can include local discomfort, ulceration, and disfigurement. Non-invasive treatment of OC includes tretinoin application and invasive treatment includes dermabrasion and punch biopsy, lasers (CO_2, erbium, and ND YAG), needle microincision-extirpation, scalpel incision, and curettage.[4,5] We report a case of isolated POC which is a rare entity and was present on an unusual site.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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