A Case of Perforating Osteoma Cutis

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A 24-year-old man presented with a 1.5 ×0.5 cm-sized erythematous nodule with central crust on the forehead since 5 years ago. There was no history of trauma or previous skin disorders. Histopathologic examination showed a typical picture of osteoma cutis. In addition, transepidermal elimination of bony material was observed: red linear plate-like calcified lamella structures had extruded to the skin surface through the perforated epidermis. The perforating type of osteoma cutis was discussed. (Ann Dermatol 15(4) 153~155, 2003).

Key Words : Perforating osteoma cutis

Osteoma cutis, which is characterized by dermal or subcutaneous bony formation is a rare cutaneous disorder. Usually it is observed as a firm nodule, most commonly on the face and scalp[1,2]. Osteoma cutis may be either primary, without previous injury to the skin, or secondary to a traumatic event to the skin.

Reports of transepidermal elimination in osteoma are rare[3-6]. We describe a case of osteoma cutis which showed transepidermal elimination of bony material.

CASE REPORT

A 24-year-old man presented with a stony hard mass since 5 years ago on the forehead.

There was no history of trauma or previous skin disorder. The family history was unremarkable. Physical examination revealed a 1.5 × 0.5 cm-sized erythematous, hard nodule with central crust on the forehead(Fig. 1). Laboratory investigations including serum levels of calcium, phosphate, alkaline phosphatase and parathyroid hormone were either negative or within normal limits.

Histopathologic examination of the 3 mm-punch biopsy from the nodule showed red linear plate-like calcified lamella structures surrounding lacunae with nuclei in the superficial and mid-dermis. The bony materials were extruded through the perforating epidermal channel. At this site, the downward proliferation of epidermis into the dermis was observed. Inflammatory cell infiltrates were also seen surrounding bony materials(Fig. 2A and B). The diagnosis of perforating osteoma cutis was made. The patient was treated with excision. 10 months later, there has been no recurrence.

DISCUSSION

Osteoma cutis is a rare, benign skin disorder. The mechanism for bone deposition is unknown. Some authors have postulated that the bone may arise from an embryonal nest of pluripotent mesenchymal cells that give rise to osteoblastic cells[7,8].

Osteoma cutis may be either primary, without previous injury to the skin, or secondary to a traumatic event to the skin. Primary osteoma cutis has two subclasses. The first is associated with Albright's hereditary osteodystrophy(AHO), which includes pseudohypoparathyroidism and pseudopseudohypoparathyroidism. This case had no clinical evidence of AHO and no family history of AHO. Laboratory investigations including serum levels of calcium, phosphate, alkaline phosphatase and parathyroid hormone were either negative or wi-

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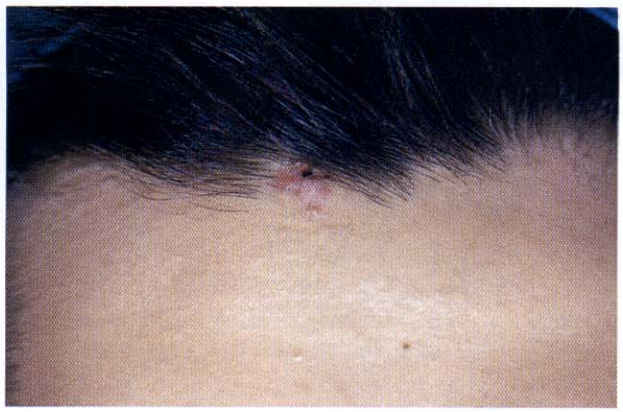

Fig. 1. A 24-year-old man presented with 1.5 × 0.5cm sized erythematous nodule with central crust on the forehead.

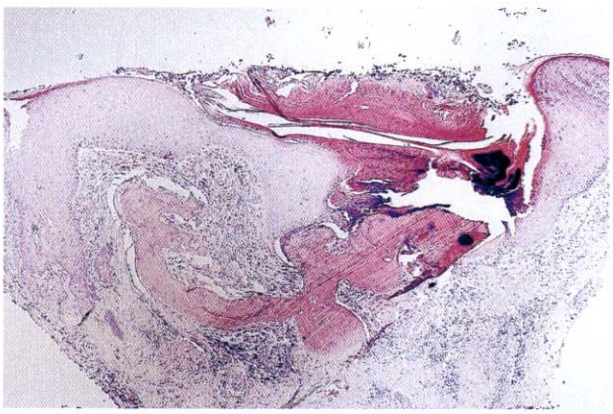

Fig. 2. (A) Red linear plate-like calcified lamella structures penetrated the epidermis and inflammatory cell infiltrate surrounding bony material was observed (H & E stain, × 40).

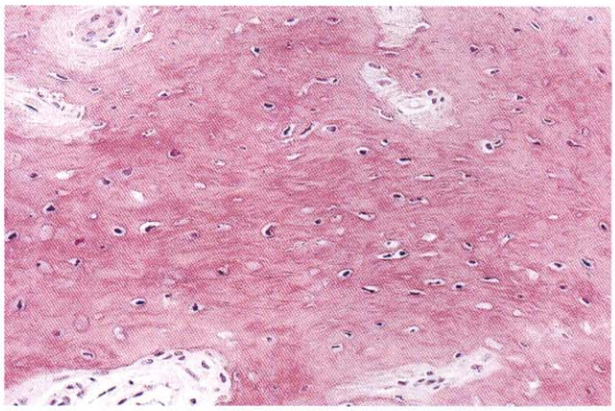

Fig. 2. (B) Bony spicule containing numerous osteocytes (H & E stain, × 200).

thin normal limits. The second class of primary osteoma cutis has four subtypes : (1) multiple miliary osteoma of the face, which is usually associated with long-standing acne (2) isolated osteoma with some cases showing transepidermal elimination of bony fragments (3) widespread osteoma usually present since birth or early life, and (4) congenital plaque-like osteomas, usually present on the scalp or extremities[9]. Our patient had no previous trauma or skin disorder, although it was difficult to exclude the possibility of previous unrecognized trauma with certainty. In addition, there was transepidermal elimination of the bony material. Therefore the case might be considered to be primary isolated osteoma showing transepidermal elimination.

To the best of the our knowledge, this case of transepidermal elimination in osteoma is the first case report in Korean literature. Delecretaz J et al. reported that three osteomas had spontaneously appeared on the lateral side of the arm in a 44-year-old woman; one of them showed a slight depression in its center and proved histologically to be a perforating osteoma[5]. Ahn et al. described a 58-year-old man who presented with erythematous, mottled, hypopigmented, indurated plaque on the back which proved histologically to be a perforating plate-like osteoma cutis with solitary morphea profunda[6]. Our case showed a hard nodule with central crust which suggested perforation.

Perforation of the epidermis occurs in a few dermatoses including the perforating folliculitis, the perforating granuloma annulare and the perforating calcinosis cutis. The mechanism of epidermal perforation is the same in all these dermatoses[10]. The pathologic tissue acts as a mechanical irritant and causes hyperplasia of the epidermis and the epithelium of the hair follicule. The epithelial hyperplasia encloses the pathologic tissue, which is gradually brought towards the surface and is finally eliminated with the keratinocytes. Ahn et al. suggested that perforation in osteoma cutis may be caused by simple upward growth of the bony plate or inflammatory reaction[6]. In our case, the bony materials in the dermis might be sufficiently irritating to the epidermis. It is supported by the histopathologic findings of inflammatory cell infiltration surrounding the bony material.

REFERENCES

1. Gropen J: Facial osteoma. Cutis 19:254-256, 1977.
2. Helm F, De La Pava S, Klein E: Multiple military osteoma of the skin. Arch Dermatol 96:681-682, 1967.
3. Duperrat B, Vanbremeersch F: Osteome perforant verruciforme post-traumatique. Ann Dermatol Syphilol 90:37-39, 1963.
4. Duperrat B, Carton FX: Osteome perforant verruciforme. Bull Soc Fr Dermatol Syphilol 73:234-235, 1966.
5. Delacretaz J, Koeng R: Osteome perforant. Dermatologica 156:251-254, 1978.
6. Ahn SK, Won JH, Choi EH, Kim SC, Lee SH: Perforating plate-like osteoma cutis in a man with solitary morphoea profunda. Br J Dermatol 134:949-952, 1996.
7. Karev A, Ben-Arieh Y: Osteoma cutis. A rare skin tumor in the finger. J Hand Surg(Am.) 6:555, 1981.
8. Wilhelmsen HR, Bereston ES: Treatment of osteoma cutis. Cutis 33:481, 1984.
9. Mast AM, Hansen R: Multiple papules on the elbows. Congenital osteoma cutis. Arch Dermatol 133:777, 1997.
10. Mehregan: Transepithelial elimination. Curr Probl Dermatol 3:124-147, 1970.