

Osteoma Cutis as a Sequela to Facial Acne: A Case Report

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Secondary osteoma cutis of the face represents a late, rare, and often unrecognized complication of chronic inflammatory acne. We present the case of a 48-year-old woman with chronic inflammatory acne followed by osteoma cutis formation. The nodules were successfully removed by simple surgical excision.

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Acne is a common disease affecting individuals of either gender, any ethnicity, and any age group.¹ Acne frequently results in cosmetic concerns with psychological distress and scarring.^{2,3} A rare consequence and complication of chronic acne is osteoma cutis, an ossification of the dermis and subcutaneous tissue.^{4,9} If unrecognized, osteoma cutis becomes a therapeutic challenge. We describe the case of a 48-year-old woman with acne vulgaris who had developed widespread facial cutaneous osteomas.

Case Report

A 48-year-old woman presented with multiple papules over both cheeks. She previously had been diagnosed with facial acne and initially had been treated with oral doxycycline hyclate, which was not effective, followed by then oral cephalixin, topical tretinoin, and hydroquinone cream 4%. The patient reported minimal improvement despite adherence to her regimen of oral antibiotics and topical retinoids for several months.

On physical examination a substantial number of closed comedones, postinflammatory

hyperpigmentation, and scattered dermatosis papulosa nigra were noted on the bilateral malar surfaces of the cheeks. The forehead also contained a few closed comedones. In addition to the acneform lesions, blue-gray indurated papules and nodules with surrounding mild hyperpigmentation were present on both cheeks (Figure 1).

Because oral and topical acne therapy failed, comedone extraction was planned as an adjunct treatment option. A total of 9 lesions were anesthetized with lidocaine 1% with epinephrine using a 30-gauge needle. On skin penetration, the needle repeatedly hit a firm substance, and thus an 11 blade and forceps were used to dissect the material. Gross observation revealed multiple osteomas measuring 2 to 4 mm (Figure 2). Biopsy results confirmed calcified trabecular bone formation in the dermis consistent with osteoma cutis. Wound closure and postoperative care were achieved using surgical adhesive strips for 5 days followed by the application of hydroquinone cream 4% to the affected areas for 1 month.

Over the course of 2 procedural visits, a total of 15 osteomas were removed from the patient's face. Two osteomas on the left cheek were not extractable because of their depth. The patient's acne continued to improve with oral antibiotics and topical tretinoin and hydroquinone. Previously extracted sites healed without evidence of scarring. The postinflammatory hyperpigmentation remarkably improved after treatment with fluocinolone acetonide 0.01%, hydroquinone 4%, and tretinoin 0.05% combination cream.

At 6-month follow-up, the patient was seen for reevaluation of her acne. Osteoma extraction sites remained well-healed and without scars; however, the patient did have active inflammatory papules on her cheeks because she had discontinued oral antibiotics. The patient was restarted on oral cephalixin and continued topical tretinoin and over-the-counter moisturizers.

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Figure 1. Multiple blue-gray firm papules and nodules with surrounding mild hyperpigmentation and closed comedones on the left cheek (A and B).

Comment

Ossification or bone formation of the dermis and subcutaneous tissue is termed *osteoma cutis*. It is a rare benign complication of severe resistant acne.⁴⁻⁹ Cutaneous osteomas are classified as either primary or secondary. Primary ossification occurs in the absence of a preexisting cutaneous disorder and is characterized by de novo bone formation.¹⁰ It may occur independently¹⁰ or as part of a syndrome such as Albright hereditary osteodystrophy, fibrodysplasia ossificans progressiva, progressive osseous heteroplasia,¹¹ or platelike osteoma cutis.¹² Secondary ossification occurs when the bone develops within a preexisting lesion.¹⁰ Secondary osteoma cutis has been observed in association with multiple disorders including nevi, scleroderma, pilomatrixoma, Malherbe calcifying epithelioma, dermatomyositis, basal cell carcinoma, scars, inflammation, trauma, calcification, appendageal and fibrous proliferations, venous stasis,¹³⁻¹⁵ and most commonly acne.^{9,10}

Our patient had secondary osteoma cutis as a sequela of acne. Multiple miliary osteomas affect



Figure 2. Multiple blue-gray bony inclusions after removal with simple surgical excision.

females almost exclusively and usually occur in women aged 20 to 30 years and middle-aged women in association with long-standing acne vulgaris.^{16,17} Furthermore, the blue-gray appearance of the skin overlying the osteomas is due to the Tyndall effect of osteoma of the skin because once the osteomas were removed, the gray color was no longer present. While our patient did not have true pigmented osteoma cutis, it can be an uncommon complication of tetracycline antibiotic therapy caused by antibiotic incorporation into the bone complexes, leading to discoloration.¹⁸⁻²⁰

The pathogenesis of osteoma cutis is not fully known and therefore controversy exists regarding the mechanism linking acne to the development of bone formation in the dermis. One theory states that a chronic inflammatory process may lead to the development of small calcifications and subsequent ossification.⁹ Our case and prior case findings may support this hypothesis,^{9,10} with acne serving as a potential mechanism for the formation of osteoma cutis.

Treatment of acne-related osteoma cutis is challenging and limited; both invasive and non-invasive treatment alternatives are available. Simple surgical excision followed by primary closure with surgical adhesive strips, as was used in our patient, resulted in an excellent cosmetic result in one patient⁷; however, the patient experienced recurrent osteomas. Other options with favorable reported results include dermabrasion combined with punch biopsy,²¹ tretinoin cream 0.05% for superficial lesions,¹⁹ and needle microincisions and extirpation.²² Treatment modalities described for primary osteoma cutis include erbium:YAG laser ablation²³ and CO₂ laser ablation¹⁵ followed by curettage. In a patient with a dark complexion,

care must be taken to perform invasive procedures on patients with low probability of scarring and to utilize only treatments that will not significantly disrupt pigmentation.

Conclusion

Patients with chronic, recalcitrant, comedonal acne lesions should be evaluated for the development of osteoma cutis. It is important to recognize this potential diagnosis, as treatment options differ considerably from typical acne therapy.

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