

CALCIFYING ACNE LESIONS

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ABSTRACT: *Cutaneous calcium deposition can occur in long-term inflammation. The deposition of calcium in long-standing acne may produce either small pigmented nodules or no visible lesions. The former type is much less common, with the nodules containing particulate spheres of mineral which probably represent true osteomas. Both types of calcification can be demonstrated roentgenographically and may occur in as many as half of all cases of severe long-standing acne.*

The fact that acne vulgaris can be counted among those chronic inflammatory conditions of the skin which may precede calcium deposition has been known for many years. Hopkins¹ first reported the phenomenon in 1928, describing a patient in whom the deposits were seen as multiple miliary osteomas. These lesions were clinically apparent, and particles of mineral could be extracted from the papules. Subsequent reports^{2, 3} have described cases similar to that of Hopkins' original patient. In 1950, Leider⁴ demonstrated that the calcifications could be identified on soft tissue roentgenograms of the face. The radiodensities were seen in some patients with long-standing acne in whom calcaneous deposits could not be clinically demonstrated, differentiating these patients from Hopkins' patient. This divergence of clinical presentations suggests that soft tissue calcification in long-

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standing acne may follow 1 of 2 separate and distinct patterns.

The form of calcium deposits as described by Hopkins represents the clinically identifiable form. Multiple 1 to 3 mm blue-black nodules can be seen and palpated with areas of previous acne activity (Fig. 1). Some evidence of scarring is usually present within these areas but this may be minimal. The pigmented nodules are nontender and resemble small foreign body tattoos. Minute, smoothly rounded mineral spheres can be removed by simple excision from the nodules, and distinct radiodensities can be demonstrated on soft tissue roentgenograms⁵ (Fig. 2).

A second form of calcium deposition in long-standing acne is the clinically inapparent form. The majority of patients with calcification have this form with no knowledge of its presence. The fact that calcification has taken place is disclosed only through roentgenographic soft tissue studies which demonstrate radiodensities indistinguishable from those seen in the other form. Because the incidence of this form of calcification has been reported in as many as two-thirds of patients roentgenographically examined,⁴ we studied a group of patients with long-standing acne and no clinical evidence of

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Fig. 1. Pigmented nodules in area of old acne scarring.

calcification to determine if this previous finding could be approximated.

Methods and Materials

Participants for this study were selected from acne patients followed through the Dermatology Section of the University of Michigan Student Health Clinic. All subjects had at least a 7-year history of acne and exhibited moderate to severe scarring, although in no instance was calcium deposition clinically demonstrable. None of the participants had previously received therapeutic radiation for the condition. The first 20 consecutive consenting patients were examined without any further qualification or selection. A single tangential soft tissue roentgenogram with orbital shielding was taken of each subject focusing on the areas of acne scarring.

Results

Of the subjects examined, 10 of the 20 or exactly 50% showed some evidence of radiodensities within the areas of previous acne activity. The extent of the tissue reaction, assumed to represent calcification, ranged from one unequivocal soft tissue density in one patient to numerous densities in others (Fig. 3). Most of the positive roentgenograms exhibited several of the radiodensities. There was no apparent correlation between the severity of scarring, beyond its presence as an initial qualification for selection, and the amount of identifiable calcification. Some of the patients with negative roentgenographic findings had a more serious degree of clinical scarring than those with positive findings. There was also no sex predilection in the series.

Comment

Calcium can be deposited in the skin as in other organs in areas of long term-tissue damage and is seen in a number of cutaneous conditions.^{5, 6} The form of this deposition may vary, however, in different disease states depending on local and systemic factors, and schemes have been devised to classify the deposition into specific types.⁷ These schemes differentiate between calcification without ossification and true heterotopic bone formation. Unfortunately, this differentiation may be difficult in practice since the tissue reaction patterns of dys-

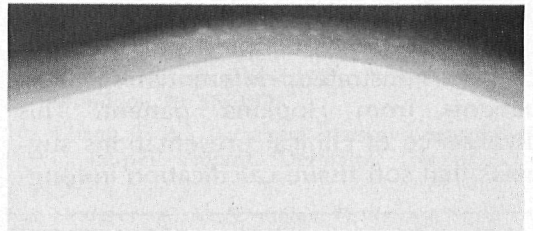


Fig. 2. Radiodensities in patient with identifiable osteomas.

trophic calcification and metaplastic ossification may be very similar. The recovery of distinct clinical specimens of mineral composition as well as microscopic demonstration of haversian canals within the particles, on the other hand, strongly suggest true ossification.

The clinically identifiable form of calcium deposition in long-standing acne has been described in numerous reports^{1-3, 8-11} as representing true metaplastic ossification. Some significant findings seem to justify this assumption. Distinct specimens of mineral composition can be removed which appear identical to particles of bone (Fig. 4). The specimens microscopically have a laminated structure with haversian canals and even an apparent marrow cavity.¹ X-ray diffraction analysis has shown the

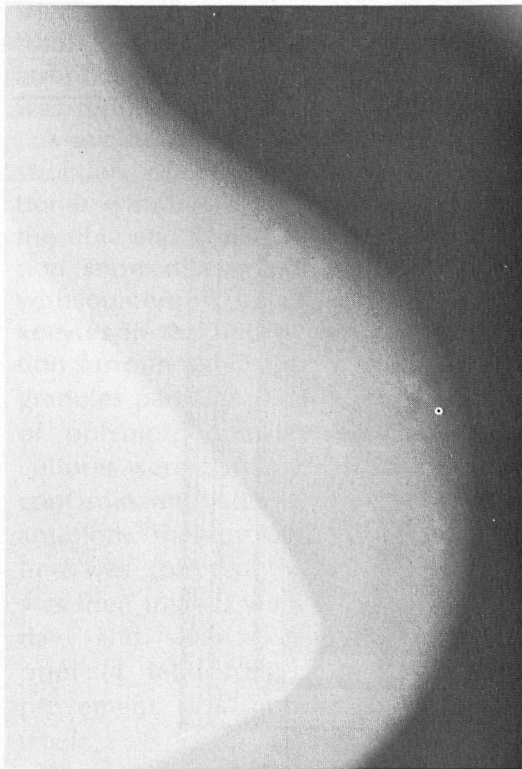


Fig. 3. Radiodensities in patient with no clinically apparent calcification.

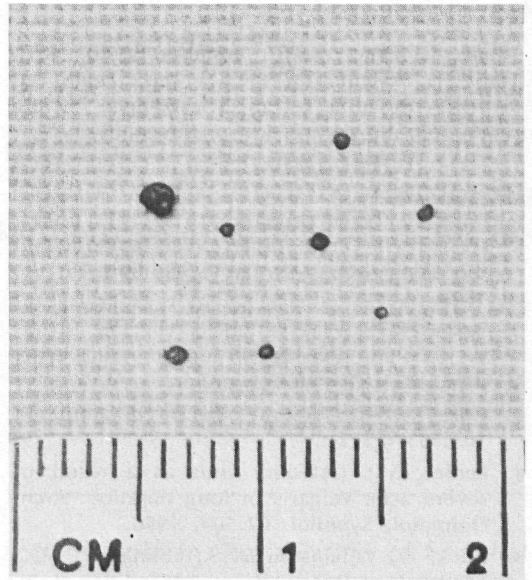


Fig. 4. Minute sphere-like osteomas removed from pigmented nodules.

matrix to be of hydroxyapatite identical to that of true bone.¹² Biochemical analysis of ectopic specimens in primary osteomas, clinically similar to those seen in acne patients, has also confirmed a composition identical to normal bone.^{13, 14} This evidence strongly supports the description of this entity as "postacne osteoma cutis."

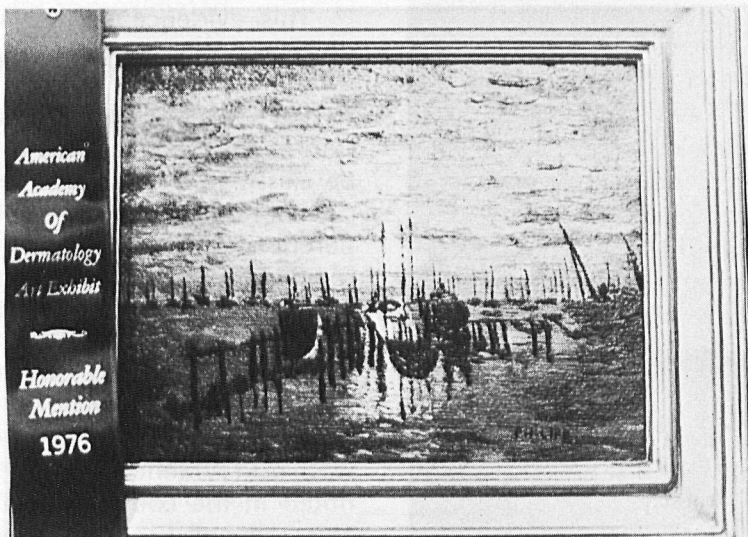
The second form of calcium deposition in long-standing acne can probably be classified as "calcification without ossification." This form is clinically inapparent and no distinct particles can be removed even though radiodensities can be identified. It is of interest that one patient in our series who had obvious radiodensities (Fig. 2) had a dermabrasion procedure performed shortly after the roentgenographic examination. There was no evidence of any calcification noted in the course of the procedure.¹⁵ This type of tissue reaction was found to be demonstrable in 50% of the patients with long-standing acne in our small but representative series.

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"Boats at Twilight," by Philip Sneid, M.D., Kansas City, MO, honorable mention oil painting from the 1976 art exhibit of the American Academy of Dermatology.

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