

Knuckle Pads

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Knuckle pads are well circumscribed thickenings of the skin over the metacarpophalangeal and, more commonly, the proximal interphalangeal joints. Although the association with several other clinical syndromes including Dupuytren's disease is well documented, most cases are idiopathic. We present a case of knuckle pads and briefly review the history and course of this disease.

Knuckle pads were well recognized by artists of the Renaissance, who frequently demonstrated lesions on their statuary. Michelangelo depicted knuckle pads on many of his classic works of art, including the statue of David in Florence and the Sleeping Slave in Paris.¹

Case Report

A 45-year-old white man presented for evaluation of asymptomatic plaques located over the lateral two metacarpophalangeal joints on the right hand that had gradually enlarged over a three-year period (Figure 1). The lesions had appeared independently at different times but each had progressively increased in size. There were no associated limitations in mobility or sensory changes. He was in good health with no other medical problems. There was no occupational or traumatic association with the onset of the plaques and no family members had similar lesions.

A punch biopsy specimen from the central aspect of one of the lesions was examined (Figure 2). This demonstrated a psoriasiform hyperplasia of epidermis with underlying fibroblastic proliferation and thickened collagen in the superficial dermis. A chronic inflammatory infiltrate was also present.

Comments

Knuckle pads were first described when Garrod² reported three cases in 1892 and twelve more³ in 1894. Although this entity has been called many different names in the past, including helodermia, subcutaneous fibroma, keratosis supracapitularis, and discrete keratodermas, the name knuckle pads is now widely accepted.⁴

The lesions grow slowly and rarely cause symptoms. They begin with a barely noticeable thickening of the skin that slowly increases in size to 1.5 to 2 cm, taking months to years before attaining their final size. Several lesions may be present at different stages since they tend to appear independently of each other. Adults are affected more commonly than children. Knuckle pads may rarely be found on the feet. The lesions may be flat or slightly dome-shaped, usually flesh-colored but may be hypopigmented or hyperpigmented, with slightly roughened surfaces. They are easily movable and usually painless, but on occasion may be slightly tender.^{5,6} Other symptoms include cosmetic concern; if large enough, they may interfere with activities such as removing a ring.

Biopsy specimens of the lesions can show one of two different patterns: predominantly epidermal changes or dermal thickening. The epidermal pattern is more common in children and shows hyperkeratosis with varying degrees of acanthosis and a slight proliferation of fibroblasts and capillaries in the upper dermis with little to no inflammation. The dermal changes that can occur include marked fibroblast proliferation with thickened, irregular collagen bundles and increased collagen in the dermis.⁷

Knuckle pads have been reported to occur idiopathically, secondary to trauma, in an inherited pattern, or associated with several other clinical abnormalities. The le-



FIGURE 1. Firm erythematous plaques with slight scale over the metacarpophalangeal joints of the right hand.

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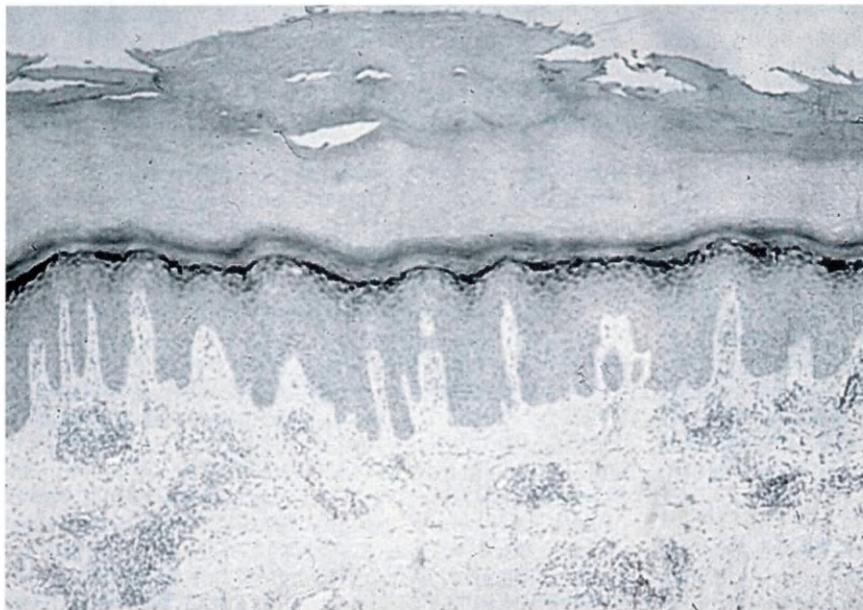


FIGURE 2. Compact hyperkeratosis with focal parakeratosis, psoriasiform acanthosis, and superficial perivascular chronic inflammation. Within the papillary and upper reticular dermis is a proliferation of spindled and stellate fibroblasts with associated thickened, eosinophilic collagen bundles (H&E; original magnification, X 100).

sions usually occur in an older person with no preceding history of trauma, although occupational trauma may be a cause in some people. The idiopathic lesions appear to be more common in children. An autosomal dominant mode of inheritance has been reported but is uncommon.⁵

One of the most common diseases associated with knuckle pads is Dupuytren's disease. Mikkelsen⁴ reported that in Norway patients with Dupuytren's disease were four times more likely to have knuckle pads than the normal population. The presence of knuckle pads was not indicative of progressive or aggressive disease. The demonstration of dermal myofibroblasts in knuckle pads by electron microscopic examination indicates that the potential for contraction similar to that in Dupuytren's disease exists, but has not been reported. The lesions are sometimes preceded by depressions over the affected joints, suggesting a role of the dermis in their evolution.⁸

Knuckle pads have also been reported in association with an autosomal dominant palmoplantar keratoderma with or without ichthyosis vulgaris. Palmoplantar keratoderma and knuckle pads have been reported in two families associated with deafness (mixed sensorineural and conductive) and leukonychia. This syndrome appears to be inherited dominantly. It is characterized by the appearance of knuckle pads during childhood, with most of the fingers involved and lesions present on the toes.^{9,10} One patient with knuckle pads associated with pseudoxanthoma elasticum has also been reported.¹¹ In children the lesions must be differentiated from one of many clinically similar lesions, including scars, keloids, and granuloma annulare. Other collagen vascular diseases such as rheumatoid arthritis and systemic lupus erythematosus can have similar lesions and should be excluded.⁵

Knuckle pads usually persist indefinitely; however, their spontaneous resolution has occurred, especially in trauma-induced lesions once the source of trauma has been

removed. Excision of the lesions is rarely indicated since recurrence is likely unless a dermofasciectomy is performed as a prophylactic measure.⁸ Other potential side effects are scarring and keloid formation.⁵ Topical treatments that have been used with varying degrees of success include roentgen treatment, application of solid carbon dioxide,¹² and more modern methods such as application of topical keratolytic agents and intralesional corticosteroids.

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