

A Case of Knuckle Pad Syndrome in a Middle-Aged Man

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Abstract

Knuckle pads are benign papules, nodules, or plaques overlying joints and typically manifest at the proximal interphalangeal joints. They may be confused with other dermatologic or rheumatologic diseases. Treatment options for primary knuckle pads are limited and acquired knuckle pads typically improve with withdrawal of the offending insult.

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ABSTRACT

Knuckle pads are benign papules, nodules, or plaques overlying joints and typically manifest at the proximal interphalangeal joints (PIPs). They may be confused with other dermatologic or rheumatologic diseases.

Treatment options for primary knuckle pads are limited and acquired knuckle pads typically improve with withdrawal of the offending insult.

CASE DESCRIPTION

A 58-year-old man presented for evaluation of joint deformity of the bilateral hands for several years. His past medical history included cervical spine stenosis with myelopathy. There was no history of joint pain or joint swelling but he did report morning stiffness lasting several hours. He reported that his hands feel tight and this sensation was worse with use. His review of systems was otherwise unrevealing including no fever, chills, night sweats, malaise, visual changes, rash, oral ulcers, hair loss, dry eyes, dry mouth, photosensitivity, Raynaud's phenomenon, chest pain, dyspnea, diarrhea, hematochezia, hematuria, back pain, symptoms suggestive of dactylitis, Achilles tendonitis, or plantar fasciitis. There was no history of similar lesions in family members or family history of rheumatologic disease.

Vital signs were normal. Physical exam revealed a healthy-appearing middle-aged male with multiple subcutaneous nodules of the bilateral hands at the PIPs and DIPs without evidence of synovitis as displayed in Figure 1. There were dystrophic nails. There was no skin rash.

X-rays of the bilateral hands were obtained as displayed in Figures 2 and 3. Studies were remarkable for moderate first carpometacarpal joint osteoarthritis of the right hand.

Musculoskeletal ultrasound of the right hand was performed to evaluate for synovitis. There was no evidence for synovitis, tenosynovitis, or erosions of the dorsal wrist. The carpal and volar recesses were unremarkable. There was mild osteophyte formation with grade 1 synovitis of MCP 2 on dorsal, volar, and side views. The third and fourth fingers were unremarkable for synovitis, tenosynovitis, or erosions on dorsal and volar views. Thickened dermis of the second (Figures 4-5), third (Figures 6-7), and fourth fingers was seen on dorsal view with otherwise unrevealing images including no synovitis, tenosynovitis, or erosions. There was no evidence of synovitis, tenosynovitis, or erosions on dorsal and volar views of the long DIP of the second, third, fourth, and fifth fingers.

Patient was diagnosed with idiopathic knuckle pads and provided reassurance about the benign nature of the findings.

CASE DISCUSSION

Knuckle pads are well-circumscribed smooth, firm papules, nodules or plaques overlying the small joints of the hands and feet. They were first described in 1893 by Garrod but have been observed in the works of the sculpturist Michaelangelo dating back to the 1500s [1]. They are benign fibromas and typically asymptomatic but may occasionally be painful. They typically present at the PIP joints rather than the MCP joints but can present in any of the small joints of the hands [2]. Less commonly, the feet and knees may be involved.

The pathophysiology has not been entirely elucidated and knuckle pads are typically idiopathic. They are a fibromatous disease with fibroblast proliferation that then develops into fibrosis [3]. They typically manifest in the second and third decade of life [4]. They may be seen in a number of inherited syndromes including palmar fibromatosis (Dupuytren's disease), plantar fibromatosis (Ledderhose's disease), camptodactyly, epidermolytic palmoplantar keratoderma, Bart-Pumphrey syndrome, acrokeratoelastoidosis of Costa [2, 5-7]. They may also be secondary and acquired through trauma. Secondary knuckle pads are well-described among athletes such as in boxers and swimmers as well as in certain professions such as carpet layers [8-10]. Knuckle pads have also been described in patients with bulimia nervosa and obsessive compulsive disorder [11,12]. The histopathology of secondary knuckle pads is distinctly different from primary knuckle pads and demonstrates hyperkeratosis with hypergranulosis and acanthosis [4]. It is histologically similar to callus.

Due to the appearance of the lesions and close association with joints such as the PIP, it may be clinically difficult to distinguish knuckle pads from other entities such as synovitis, rheumatoid nodules, Heberden nodes, or even gouty arthropathy. Knuckle pads may also be difficult to distinguish from other dermatologic diagnoses such as erythema elevatum diutinum, verruca, granuloma annulare, and pachydermodactyly [13-

16]. Patients are often referred to rheumatologists for evaluation and undergo evaluation for rheumatologic disease such as is in the case of our patient. Distinguishing knuckle pads from synovitis may be challenging on the basis of physical exam alone. Musculoskeletal ultrasound may be helpful to characterize knuckle pads which have a distinct appearance on ultrasound.

On ultrasound, primary knuckle pads will appear as subcutaneous hypoechogenic nodular thickenings. They typically have a dome shape with irregular borders and are noncompressible with the transducer. Power Doppler should be performed which will reveal absent vascularization or only involvement of the periphery of the lesion. The adjacent soft tissue, tendons, and joints should not be involved. Rarely, MRI may be performed which will demonstrate low to intermediate signal intensity on T1-W1 and T2-WI MRI [4, 17-20].

Treatment of knuckle pads may be challenging. They are benign but some patients may desire intervention for cosmetic purposes in which case there are limited therapies. Some authors have described successful application of intralesional triamcinolone as well as fluorouracil, cantharidin-podophyllotoxin-salicylic acid, and topical high-dose salicylic acid and urea [21-24]. Acquired knuckle pads such as in the case of repetitive trauma should improve within months if the offending insult is removed.

CONCLUSIONS

Knuckle pads are a rare, benign clinical entity and can be classified according to whether they are primary or secondary. They may be difficult to distinguish clinically from other rheumatologic processes such as synovitis, early psoriatic arthritis, or rheumatoid nodules. Musculoskeletal ultrasound may be helpful in establishing the diagnosis. The clinical course is benign and therapeutic interventions are limited.

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