Pigmented Villonodular Synovitis Great Toe

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Abstract A young boy of 14 years, presented with swelling over dorsal aspect of right great toe, which was slightly tender, non fluctuant. It was excised under subarachnoid block. The mass was golden brown in colour encircling the extensor tendon (Extensor Hallucis Longus Tendon). Histopathology reported to be Pigmented Villonodular Synovitis.

Keywords Great Toe · Pigmented · Villonodular · Synovitis · Diffuse · Tenosynovitis

Introduction

Synovitis of small joints is known. There are different varieties of joint swelling due to arthritis; synovitis has been documented. The pigmented villonodular variety of synovitis is known to involve usually big joints such as knees, but involvement of the proximal metatarsophalangeal joint of the great toe has rarely been documented.

The synovium of a joint, bursae, or tendon sheath may react to injury in a peculiar manner. Villous processes and

nodules are produced by histiocytes that may contain varying amount of hemosiderin. Lipids accumulate beneath the synovium and fibrosis develops to variable extent.

In pigmented villonodular synovitis (PVNS), synovium is distinctly brownish orange and thrown into many villous processes. Thus, recurrent episodes of painful blood effusions of joints are common in the history. X-ray may show erosion of bones by synovial reaction but is usually negative.

The giant cell tumor of tendon sheath may resemble PVNS but microscopically found to have less hemosiderin and lipids. Microscopically PVNS lesions have villi covered with synovial cells and contain an infiltrate chiefly of histiocytes and other inflammatory cells. Histiocytes contain hemosiderin and lipids and may fuse to form giant cells. The lesion may be cellular enough to resemble a sarcoma. Occasionally it may protrude into surrounding tissues and look grossly like a tumor.

Case Report

A 14-year-old boy presented with a swelling—which was of peanut size when initially noticed for the first time—over the dorsal aspect of the right great toe for past 4 years. It kept on gradually increasing to almost walnut size. The patient did not have any constitutional symptoms or pain in the swelling or other joints. His general condition was normal while local examination of the great toe revealed a firm, slightly tender swelling over the dorsal aspect of metatarsophalangeal and interphalangeal joints of the great toe. There was no fluctuation, no

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Fig. 1 a Side view and b top view

skin changes over swelling, or no change with movement of the great toe. There was no pain in the joint on movement of the great toe. Clinically the swelling was encircling the extensor hallucis longus tendon. The patient was preoperatively worked up. All routine investigations were within the normal range. X-ray of the great toe region was essentially normal, and no obvious bony lesion was seen; therefore, the patient was subjected to surgery under subarachnoid block. On the dorsal aspect, S-shaped incision was given and flaps were raised from base of the nail to dorsum of the foot crossing both metatarsophalangeal and interphalangeal joints. The swelling was well exposed. It was found to be arising from the synovial cavity of the joint and was golden brown in color, also encircling the extensor tendon (extensor hallucis longus right great toe). The first of all, the extensor tendon was separated from the swelling and brown material was separated and excised piecemeal from metatarsophalangeal and interphalangeal joints. Wound healed in 10 days. Histopathology came out to be PVNS (Figs. 1 and 2).

Discussion

The giant cell tumor of tendon sheath—also labeled as nodular tenosynovitis [1–6], localized villonodular synovitis, and

fibrous histiocytoma of the synovium [7]—is a benign solitary tumor which usually arises in the limbs. It mostly affects hands but is less common in the foot and ankle [7]. Usually the lesion is a solitary, painless, slow-growing, soft tissue swelling, sometimes painful [7]. It has been found to be slightly higher in females and affects the young age group. PVNS is rare but potentially the aggressive lesion attacks synovium of the joints, tendon, sheath, or bursae. About 2.5 % cases occur in the foot and ankle. Granovitz and Mankin divided PVNS into two forms: (a) nodular and (b) diffuse [8]. Both forms can occur in the foot and ankle. Our patient had nodular variety of the great toe lesion. Earlier this disease was considered a low-grade synovial malignancy, which is now considered a benign disease [8]. Most of the cases are monoarticular and do not metastasize though they may be locally destructive [8]. MRI has been found to be the most useful investigating tool in diagnosing PVNS [7, 8]. PVNS has been found to have substantial recurrence rates [7, 8]. Because of a large number of joints and lack of integrity of superficial muscle layers in the foot, the disease spreads into adjacent joint spaces and it is difficult to be excised surgically completely [7, 8]. Radiotherapy has been advised for the recurrent lesion, but radiation oncologists are reluctant to advise radiotherapy to such non-malignant diseases [8]. Alternatively an injection of radioactive yttrium-90 has been locally advocated [8]. In our patient we did near-total excision of the lesion surgically but he was not given radiotherapy. Radiotherapy 2600 CGy dose has usually been given [7–9].

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Fig. 2 Histopathology of giant cell: a low-power view and b high-power view

References

1. Jaffe HL, Lichtenstein L, Sutro CJ (1941) Pigmented villonodular synovitis, bursitis, and tenosynovitis. *Arch Pathol* 31:731–765
2. Somerhausen NS, Fletcher CD (2000) Diffuse-type giant cell tumor: clinico-pathologic and immunohistochemical analysis of 50 cases with extraarticular disease. *Am J Surg Pathol* 24:479–492
3. Ferrer J, Namiq A, Carda C, Lopez-Gines C, Tawfik O, Llombart-Bosch A (2002) Diffuse type of giant-cell tumor of tendon sheath: an ultrastructural study of two cases with cytogenetic support. *Ultrastruct Pathol* 26:15–22
4. Alguacil-Garcia A, Unni KK, Goellner JR (1978) Giant cell tumor of tendon sheath and pigmented villonodular synovitis. An ultrastructural study. *Am J Clin Pathol* 69:6–17
5. O'Connel JX, Fanburg JC, Rosenberg AE (1995) Giant cell tumor of tendon sheath and pigmented villonodular synovitis. Immunophenotype suggests a synovial cell origin. *Hum Pathol* 26:771–775
6. Darling JM, Goldring SR, Harada Y, Handel ML, Glowacki J, Gravallese EM (1997) Multinucleated cells in pigmented villonodular synovitis and giant cell tumor of tendon sheath express features of osteoclasts. *Am J Pathol* 150:1383–1393
7. Gibbons CLMH, Khwaja HA, Cole AS, Cooke PH, Athanasou NA (2002) Giant cell tumour of the tendon sheath in the foot and ankle. *J Bone Joint Surg* 84(7):1000–1003
8. Lee M, Maharroof S, Pringle J, Short SC et al (2005) Diffuse pigmented villonodular tenosynovitis of the foot and ankle, treated with surgery and radiotherapy. *Int Orthop* 29(6):403–405
9. Farzan M, Mortazavi SM J, Yousef Sibdari S, Rafiee E (2007) Pigmented villonodular synovitis of the great toe metatarsophalangeal joint (case report) [in Persian] 65(5):84–87