

Case Report

Pseudotumor of Hand Foreign Body Granuloma

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ABSTRACT

Foreign body granuloma develops following a skin penetrating injury with retention of a foreign body, which subsequently causes a reactive inflammatory granulation tissue around it. It can mimic as a pseudotumor; hence, its early detection and diagnosis with imaging can help in its management and prevent further complications. We report a 10-year-old boy with swelling on the dorsum of the hand causing scalloping of the 3rd metacarpal presenting as pseudotumor and was confirmed to be a foreign body (thorn) granuloma on ultrasonography and magnetic resonance imaging (MRI). The characteristic appearance of foreign body in soft tissue on ultrasound is an echogenic structure giving posterior acoustic shadowing, and on MRI it typically appears as a low signal intensity structure on T1- and T2-weighted images with peripheral ring enhancement. Hence, the possibility of a foreign body granuloma should be ruled out in cases of suspected soft tissue neoplasm in extremities, despite no significant history of previous trauma.

Keywords: Foreign body granuloma, Pseudotumor, Hand, Ultrasound, Magnetic resonance imaging

INTRODUCTION

Foreign body granulomas can develop secondary to penetrating trauma, with the retained foreign body commonly being a wooden splinter or a glass piece. There is surrounding inflammatory granulation tissue reaction seen adjacent to the foreign body.^[1] These commonly mimic a soft tissue neoplasm and therefore have to be diagnosed and differentiated from the same.^[2] They generally present with pain and swelling and involve the extremities with history of penetrating trauma or injury.

Foreign body granulomas have a characteristic appearance on radiological imaging such as ultrasound and magnetic resonance imaging (MRI) which help in their early diagnosis and prevention of complications.

CASE REPORT

A 10-year-old boy presented with swelling and pain on the dorsal aspect of his hand for the past 6 months [Figure 1]. The patient gave no significant history of trauma, however, on probing further revealed that he had slipped and had fallen on his garden hedge 7 months ago. Radiograph of the patient showed a soft tissue density with scalloping along the medial aspect of the third metacarpal [Figure 2]. Fine-needle aspiration cytology was done for this soft tissue lesion and was reported as a benign fibroblastic lesion. The patient was referred to our hospital with a progression in size of the lesion. Ultrasound of the lesion revealed a linear echogenic structure, suggestive of a foreign body with surrounding hypoechoic soft tissue thickening due

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Figure 1: A 10 year old boy with foreign body granuloma presented with swelling on the dorsal aspect of his hand (arrow).



Figure 3: Ultrasound: shows linear echogenic structure suggestive of a foreign body with surrounding inflammatory changes adjacent to the 3rd metacarpal (arrow).



Figure 2: Xray-hand (Posterior-anterior view) shows soft tissue density with scalloping along the medial aspect of the 3rd metacarpal (arrow).

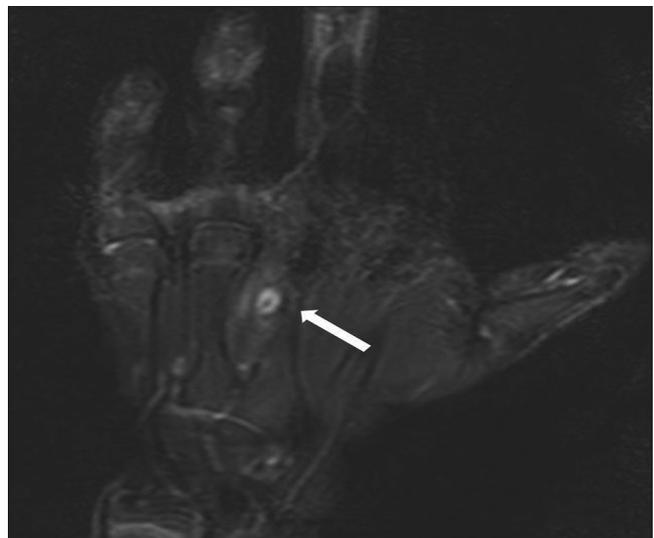


Figure 4: MRI -T2 weighted image (coronal plane) – shows a linear hypointense structure in the central region with peripheral hyperintense area (arrow) adjacent to the 3rd metacarpal.

to inflammatory/granulomatous changes adjacent to the 3rd metacarpal [Figure 3]. MRI was done subsequently to confirm the diagnosis which showed a linear hypointense structure on T1- and T2-weighted images [Figure 4] with peripheral ring enhancement on post-contrast study [Figure 5]. The patient underwent surgical excision and removal of the foreign body (thorn) and was asymptomatic on follow-up.

DISCUSSION

Foreign body granulomas can have different morphology according to the material of foreign body, size, and site

of injury in a patient. Penetrating injury in soft tissues can mimic a pseudotumor with relevant history and imaging is very useful for its diagnosis.^[1]

Extremities including both upper and lower limbs are common sites for foreign body granulomas and they generally occur in younger patients.

A radiograph is a screening modality for the detection of suspected foreign bodies and considered good for radio-opaque materials such as glass pieces. However, radiolucent foreign bodies such as wooden splinter or thorns can only

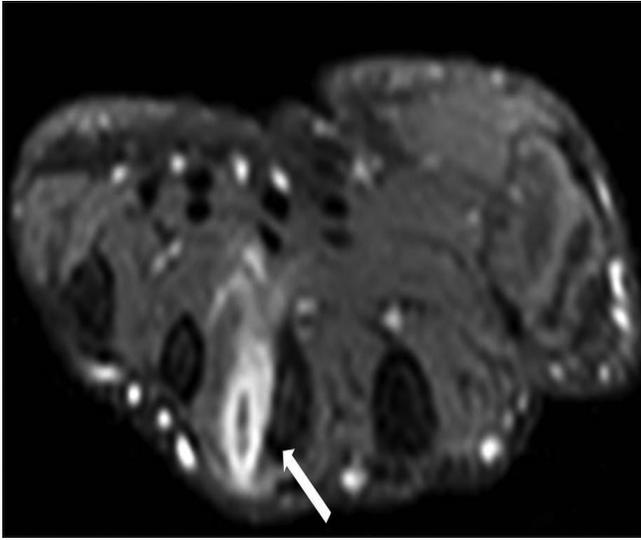


Figure 5: MRI -T1fat- saturated post contrast image-showing peripheral ring enhancement (arrow) and causing scalloping of the adjacent 3rd metacarpal.

be seen in approximately 15% of the cases.^[3] In our index case, there was scalloping of the bone; however, we could not detect the foreign body on the radiograph. Computed tomography is more accurate in the diagnosis of radio-opaque foreign bodies.

Ultrasonography (USG) is sensitive and specific for the detection and localization of a foreign body. The wooden splinters are seen as echogenic structures with posterior acoustic shadowing and are surrounded by hypoechoic ill-defined soft tissue representing the reactive inflammatory granulation tissue. However, foreign bodies that are very small may not be seen on ultrasound.^[4,5]

MRI compliments ultrasound in the detection of a foreign body. There is a characteristic appearance of a foreign body granuloma with the central part appearing as low signal intensity or flow void on T1- and T2-weighted images and there is peripheral ring-like enhancement seen due to granulation tissue on post-contrast study as was seen in our index case, thus differentiating it from other soft tissue neoplasms.^[6]

The most common tumor of hand is a ganglion cyst, seen in 40%–60% of the patients presenting with swelling of the hand. They commonly occur on the dorsum of the hand adjacent to the scapholunate ligament and are mostly diagnosed on ultrasound as anechoic fluid-filled structures giving posterior acoustic enhancement and may show communication with the joint. The second most common lesion of hand is giant cell tumor of tendon sheath, which appears as homogenous hypoechoic soft tissue lesion on USG and is in close relation to a tendon. On MRI, they show T2 hypointense areas within and show enhancement of the solid areas on post-contrast study, thus differentiating it from foreign body granulomas.^[7]

CONCLUSION

Thorn injury in tissues may mimic a tumor. In the absence of a clear history, the radiographic appearance of the bone reaction can be confusing. In such cases, ultrasound and MRI are effective modalities to localize the foreign body and establish the diagnosis.^[8]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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