Calcifying aponeurotic fibroma at the sole of the foot in a 5 year old girl. A case report with 5 years follow up.

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ABSTRACT

Purpose

Calcifying aponeurotic fibroma is a rare, benign tumor of differentiated fibroblasts with high rates of recurrence. To present the treatment plan and follow up of this rare case.

Methods

We present a case of a 5 year old girl, with a palpable mass on the plantar aspect of her left foot. No trauma history was reported. Plain radiographs of the foot didn't show any evidence of bony involvement. Ultrasound of the soft tissue showed a subcutaneous tumor sizing 1,4 x 1,3 x 1,2 cm. MRI scan featured on both T1 and T2 weighted sequences a benign fibrotic tissue with well defined margins.

Results

An excision procedure was performed under general anesthesia. The excised tissue was sent for biopsy and a calcifying aponeurotic fibroma was diagnosed. 5 years post op there was no clinical evidence of recurrence. However a subcutaneous painless scar tissue was palpated with no impact on child's everyday living and activities.

Conclusions

Until now sparse cases of Calcifying Aponeurotic Fibromas in children have been reported. Differential diagnosis includes fibro-sarcoma, dermatofibroma and other fibromatosis. In our case excision of the tumor provided a complete treatment with no later impact to patients quality of life.

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INTRODUCTION

Calcifying aponeurotic fibroma (CAF) is a rare, slow growing, benign fibrous tumor with high rates of recurrence [1-3]. It was first described by Keasby in 1953 as a juvenile aponeurotic fibroma [4]. Commonly it occurs in the first or second decade of life (8-14 years peak incidence) with higher prevalence in males over females [5,6]. The most common sites of CAFs are the fingers, palms and soles but there are reports involving neck, forearm, elbow, thigh, knee and back [7-10]. Usually all incidences are closely associated with aponeuroses, tendons or fascia but often invade adjacent bone [2, 8, 11]. Previous studies suggest that recurrence rate, even after complete excision, is approximately 50% [2, 3]. To determine the recurrence rate two types of CAF have differentiated. The first one involves younger children, is more infiltrative, lacks calcification and has higher rates of recurrence. The second one is more nodular in structure, it presents with speckled calcification and is reported to older children with lower relapse rates [4,7,8].

The tumor appears as a soft tissue mass on plain radiographs with increased calcification as age progress making it easier to visualize [12, 13]. On magnetic resonance imaging (MRI) heterogeneous combinations of high and low intensity signal on T2-weighted images and intermediate signal intensity on T1-weighted images [11, 14]. MRI can orient the extent of the lesion, possible bone involvement and preoperative planning [4, 15]. Ultrasound can initially ruled out a fluid-filled mass, such as a ganglion cysts

METHODS AND MATERIALS

A 5 year old girl presented with a painless, palpable mass on the sole of her left foot. No history of trauma was reported and no significant previous medical history. The tumor was detected below the third metatarsal on the plantar aspect of patient's left foot. A firm subcutaneous mass was detected of around 2 cm during physical examination. The skin was unaffected and the patient was complaining for a light discomfort during gait. Plain radiographs (Fig. 1) of the lower foot showed no bony involvement and routine blood tests were unremarkable. During soft tissue ultrasound examination, a subcutaneous mass sizing 1,4 x 1,3 x 1,2 cm was presented. MRI scan was prescribed to detect the boundary of the mass and featured on both T1 and T2 weighted sequences a benign fibrotic tissue with well defined margins (IMAGE). An excision biopsy was scheduled with no further hesitation.

RESULTS

Under general anaesthesia a longitudinal incision was performed across the plantar aspect of the third metatarsal. The tumor was located and excised on healthy borders. Macroscopically it was a yellow-pale tissue with speckled areas of calcification.

Excised tissue sent for biopsy and histopathological examination confirmed the diagnosis for CAF. The findings indicated that the tumor constituted by mesenchymal cells in nodule array, central calcification and fibroplastic metaplasia. Giant cells around the calcified areas were also recognized.

1 year post op a new MRI scan was performed with no evidence of recurrence. 5 years post op still there was no clinical or imaging evidence of recurrence. However a subcutaneous painless scar tissue was palpated on the site of the excision. However there was no impact on child's everyday living and activities.

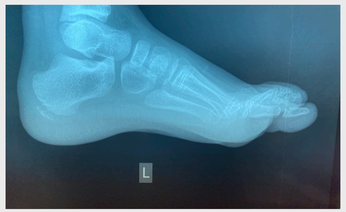

Figure 1. Plain radiographs with no bony involvement

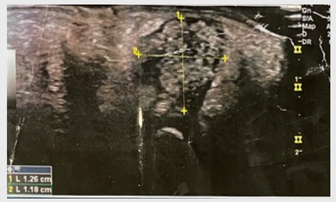

Figure 2. Ultrasound images of the tumor.

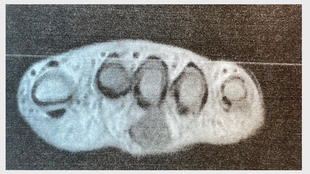

Figure 3.
MRI findings
of the subcutaneous mass

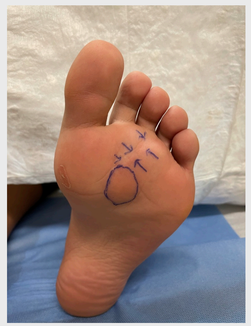

Figure 4.
Subcutaneous painless
scar tissue 5 years
post-op.

DISCUSSION

CAF is a rare invasive fibroblastic tumor that was first reported as javelin aponeurotic fibroma [4]. Clinical findings suggestive of CAF are patients age, site of lesion and significant radiographic findings. Usually the tumor is painless and rarely causes complications like pain or restriction of range of motion[13]. Generally CAF does not metastasize but there are reports of malignant transformation [12, 13].

The treatment is surgical but the 50% of CAF tumors recur topical [2, 8, 17].Usually in patients younger than 5 years of age between the first and the third year of the excision [8]. On X-rays, CAF is presented as a protrusion on soft tissue with peculiar calcific stippling in some cases, however it is not always correlated with pathological calcification [4, 13]. Ultrasound is useful visualizing the extension of the lesion[11, 15] and can detect microlithiasis. Computed tomography reveals non-specific soft tissue mass with stippling of calcification. MRI features can provide important information regarding the lesion extension and preoperative planning. But although it can aid in differential diagnosis, it cannot discriminate CAF from different entities with varied prognosis [11, 17].

CAF should be included in differential diagnoses of any tumor with calcification like plantar fibromatosis, soft tissue chondroma, synovial sarcoma, calcified epidermoid, nodular fasciitis, fibrosarcoma and dermatofibroma [1].

CONCLUSIONS

In our case, we reported a case of a 5 year old girl with CAF on the plantar aspect of her left foot. Although imaging modalities like plain radiographs, ultrasound and magnetic resonance imaging were presented, the final diagnosis was given through tissue biopsy. After the complete excision of the tumor no recurrence was reported. Radical excision should be avoided regarding the benign characteristics of CAF, considering that during maturation of the tumor, it becomes less aggressive.

With average follow up for most of the cases reported from 1 to 3 years, we followed up the patient for 5 years after the procedure with no clinical and imaging findings regarding local recurrence.

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