VOLUME - 12, ISSUE - 12, DECEMBER - 2023 • PRINT ISSN No. 2277 - 8160 • DOI : 10.36106/gjra

Original Research Paper

Pathology

CALCINOSIS CUTIS- A RARE CASE DIAGNOSED ON ASPIRATION CYTOLOGY WITH RADIOLOGICAL CORRELATION.

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ABSTRACT Calcinosis cutis is an uncommon condition characterized by the deposit of calcium salts in the subcutaneous tissues of the body. Calcifications can also occur in a variety of other clinical settings and can be subjected to fine-needle aspiration (FNA). Since cutaneous calcific deposits may clinically mimic a tumor, it is feasible to diagnose them by FNA cytology (FNAC). We reported a case of calcinosis cutis that was diagnosed by fine needle aspiration cytology (FNAC) with radiological findings correlations in a 2-year-old male who presented with a single solitary subcutaneous nodule in the left axilla. Cytological finding of amorphous calcium crystals with histiocytes , on radiology a well defined, encapsulated, hypoechoic lesion with multiple foci of calcification and the appropriate clinical background led to the cytodiagnosis of idiopathic calcinosis cutis.

KEYWORDS : amorphous calcium, calcinosis cutis, Cytological, radiology

INTRODUCTION

Virchow initially described calcinosis cutis in 1855. Calcinosis cutis is a group of disorders characterized by deposition of calcium salts in the skin. Calcinosis cutis develops due to deposition of hydroxyapatite crystals of calcium phosphate in the skin. There are various causes such as abnormal calcium or phosphorus metabolism, tissue damage or idiopathic factors. Calcinosis cutis is classified into four major types according to etiology — dystrophic, metastatic, iatrogenic, and idiopathic. A few rare types have been variably classified as dystrophic and idiopathic. These include calcinosis cutis circumscripta, calcinosis cutis universalis, tumoral calcinosis, and transplant-associated calcinosis cutis.[1]

Calcifications occur in a variety of other clinical settings. Metabolic calcification usually results in generalized mineral deposition in visceral organs. It is associated with abnormal calcium and/or phosphate levels. Dystrophic calcification, occurring in either a localized or a generalized pattern, results from an underlying inflammatory process, and it is found in patients with normal serum chemistry levels. Metastatic calcifications are complications found in patients with hyperparathyroidism and end-stage renal disease.[2]

Idiopathic calcification occurs without any underlying tissue damage or metabolic disorder. Skin calcification in iatrogenic calcinosis cutis is a side effect of therapy. Calciphylaxis presents with small vessel calcification mainly affecting the blood vessels of dermis or subcutaneous fat.[1]

Tumoral calcinosis is a hereditary disease of phosphate metabolic dysfunction but it is commonly mistaken for a lesion. The soft-tissue lesions of tumoral calcinosis are typically lobulated and well-demarcated calcifications that are most often distributed along the extensor surfaces of large joints.[3]

Family history, history of trauma or injection, tropical or subtropical residence, number and location of calcium deposits, serum calcium and phosphate level, and autoimmune screening are to be evaluated for the appropriate classification of a case.[4]

We present a case of idiopathic calcinosis cutis diagnosed on fine needle aspiration (FNA) cytology in an otherwise healthy child. Points of caution for a correct interpretation of the cytological findings are also discussed.

Case Report

A 2-year-old male presented with a subcutaneous nodule of about 2 cm × 1 cm size in left axilla, on local examination nodule was firm to hard in consistency, mobile, non-tender and overline skin was normal in appearance [Figure 1]. FNAC was attempted once only that yielded little amount of whitish granular material. Hematoxylin and eosin stained smears showed paucicellularity and abundant amorphous calcium crystals along with few degenerated histiocytes [Figure 3 & 4] .On radiology a well defined, encapsulated, hypoechoic lesion with no internal vascularity. Content in the lesion shows twinkling artefact suggestive of calcification [Figure 2].The serum calcium 9.80 mg/dl , ionic calcium 1.28 mmol/L , serum phosphorus 3.8mg/dl, and serum alkaline phosphatise 250 U/L level where within normal limit. Based on these cytological and radiological findings, the diagnosis of calcinosis cutis was made.

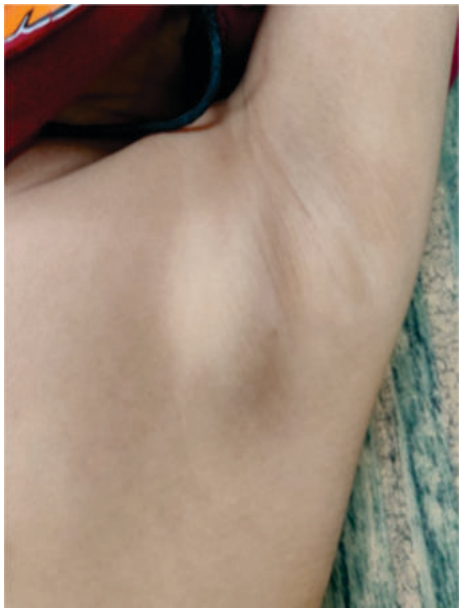

Figure 1 : Subcutaneous Nodule of 2x1cm in Left Axilla.

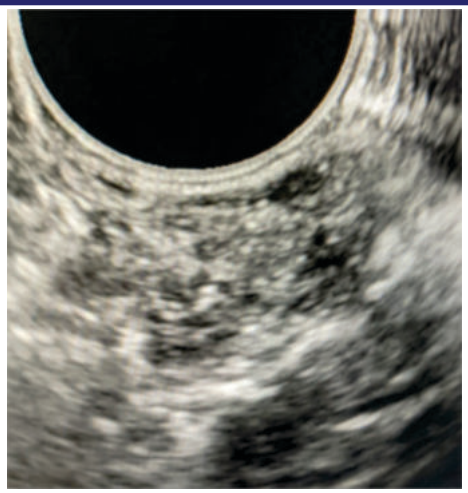

Figure 2: USG Shows Twinkling Artefact Suggestive of Calcification.

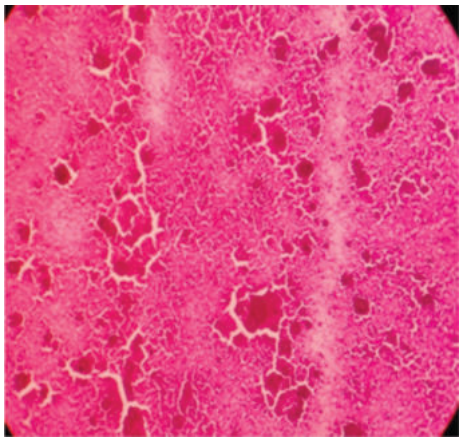

Figure 3 : Low Power: Amorphous Calcium Salts with Histiocytes. (H and E stain, x 100)

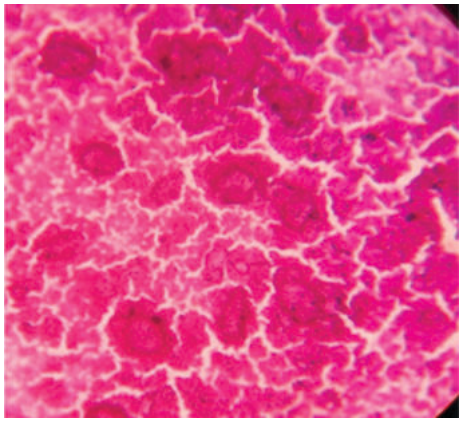

Figure 4: High Power, Calcium Crystals (H and E stain x 400)

DISCUSSION

Different types of calcinosis cutis have been previously described. It is very veritably to identify the exact type of calcinosis so that an accurate treatment can be started for the effective management of the disease.

In the present case, all the investigations to evaluate abnormal calcium metabolism (serum calcium, serum phosphorus, and serum alkaline phosphatase) revealed results within normal limits and no history of trauma, connective tissue disorder,and intravenous administration of solutions containing calcium or phosphate, hence the diagnosis of idiopathic calcinosis cutis was considered.

The idiopathic calcinosis term is used in the absence of any known cause of tissue calcification. In the present case, a negative history of trauma and parenteral therapy or any preceding pathological lesion at the site, along with normal serum calcium and phosphorus levels clearly excluded the possibility of dystrophic, iatrogenic and metastatic causes. The pathogenesis of calcification is unknown.

FNA samples yielding abundant calcium crystals require careful consideration of certain entities that include calcified fibrous pseudotumor, calcified epidermal cyst, sarcoidosis, tuberculosis, lymphoepithelial lesion, pilomatricoma, osteitis fibrosa cystica, and extra skeletal osteosarcoma in the differential diagnosis. A calcified fibrous pseudotumor shows abundant hyalinised collagen, fat, and neurovascular bundles along with calcification [5]. Calcified tuberculosis and sarcoidosis show a granulomatous reaction [6] whereas calcified epidermal cyst shows anucleate and nucleate squames. Pilomatricoma shows basaloid cells, ghost cells, multinucleated giant cells in addition to calcification [7]. Lymphoepithelial lesions show a polymorphous population of lymphoid cells along with histiocytes and calcification [8]. Absence of any tumor cells rule out extraskeletal osteosarcoma. The clinical evaluation helps in the exclusion of osteitis fibrosa cystica. Reiter et al reviewed various conditions that may lead to skin calcification and provided information regarding laboratory tests required to differentiate various types of calcinosis cutis [9].

Till date, there are very few case reports on FNA cytology of idiopathic calcinosis cutis [10-12] which if properly interpreted can lead to correct cytodiagnosis of this disorder. The technique is of great diagnostic importance in determining cases requiring medical rather than surgical treatment.

Deshpande et al. diagnosed a case of calcinosis cutis in a 20-year-old male who presented with a solitary subcutaneous nodule near the ankle, as found on the lateral malleolus by FNA.[13]

Shivkumar et al. studied the cytological features of idiopathic scrotal calcinosis and noted the presence of intense, basophilic, amorphous, and granular deposits surrounded by lymphocytes, histiocytes, and foreign body giant cells without any evidence of epithelial cells in the smears.[14]

In the present case, all the investigations to evaluate abnormal calcium metabolism (serum calcium, serum phosphorus, and serum alkaline phosphatase) revealed results within normal limits and no history of trauma, connective tissue disorder,and intravenous administration of solutions containing calcium or phosphate, hence the diagnosis of idiopathic calcinosis cutis was considered.

CONCLUSION

By performing FNAC on soft-tissue lesions can obviate needless tissue biopsies for lesions, such as calcinosis cutis, in appropriate patients, thus avoiding the risks and complications associated with more invasive procedures.

Financial Support and Sponsorship: Nil.
Conflicts of Interest: There are no conflicts of interest.

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