Case Report **Open Access**

Iatrogenic Calcinosis Cutis

Muhammad Danish, Asma Afzal Kiyani, Sana Sharif, Sarah Khan, Sana Mehmood, Huma Hameed

ABSTRACT

Calcinosis cutis is a condition which occurs due to deposition of calcium salts in the skin and subcutaneous tissue. Various etiologies include dystrophic, metastatic, idiopathic, calciphylaxis, or iatrogenic calcinosis cutis. The type related to our case is iatrogenic calcinosis cutis, and one its possible causes is intravenous calcium infusion.

Case presentation:

First case of 01-month-old baby boy, who was treated with IV calcium gluconate for hypocalcemia and vitamin D deficiency. Later on, he developed treatment-related complication of intravenous(IV) calcium, and was diagnosed with iatrogenic calcinosis cutis.

Second case was of 02 months old baby boy, who was treated with surfactant replacement therapy and IV calcium for respiratory distress syndrome and hypocalcemia. He developed swelling at IV inj site and diagnosed with iatrogenic calcinosis cutis.

Conclusion: Calcinosis cutis has wide differential diagnosis. Treating doctors should be aware of this benign condition when giving IV calcium infusion.

Keywords: Calcinosis cutis, Extra osseous calcification, IV Calcium gluconate

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INTRODUCTION:

Calcinosis cutis typically arises in individuals due to the abnormal accumulation of calcium salts within the subcutaneous tissues. One contributing factor is the administration of intravenous calcium gluconate or calcium chloride for conditions linked to hypocalcemia. The development of lesions and nodules in calcinosis cutis can occur either slowly and gradually or may progress rapidly and severely[1]. The clinical manifestations can range from localized areas to extensive lesions affecting larger regions. In instances of calcinosis cutis resulting from intravenous calcium treatment, lesions commonly emerge at the site of intravenous access. Calcinosis cutis can be difficult to diagnose and treat because it mimics a lot of other conditions. In addition, calcinosis cutis can also be idiopathic, dystrophic, metastatic, or calciphylaxis[2].

Here, we report two cases iatrogenic calcinosis cutis.

Case 01: A baby boy was admitted on 1st day of life in NICU as baby was observed to have hypoglycemia, hypocalcemic seizures and respiratory distress and was kept in incubator care on low flow nasal oxygen. All essential labs were sent and appropriate antibiotics were started. Baby was monitored for hypoglycemic episode and low calcium levels for which he was placed on inj Calcium gluconate. First CRP was raised and Beta D glucan was also raised, so baby was treated accordingly for sepsis and thrombocytopenia. Oxygen was gradually tapered off. 2D ECHO was done which showed small ASD and closing PDA for which brufen was given. Baby was shifted to cot care and mother handling was done. A swelling was observed in medial aspect of left leg with overlying reddish discoloration of skin with no itchiness, pus discharge. The area exhibited tenderness and felt warm to the touch(Figure-

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1). The patient was afebrile, and all other joints remained unaffected. There was no family history of a similar condition, no consanguinity between the parents, and no prior occurrences of congenital or metabolic diseases within the family. X-ray showed extra osseous calcification in subcutaneous tissues of medial side of left leg. (Figure-2). Repeat X-ray after 04 months showed complete resolution of swelling and calcification in aforementioned area of left leg. (Figure-3).

Figure-1 shows swelling and redness of at medial aspect of the leg

Figure-2 shows subcutaneous extra osseous ossification in left leg

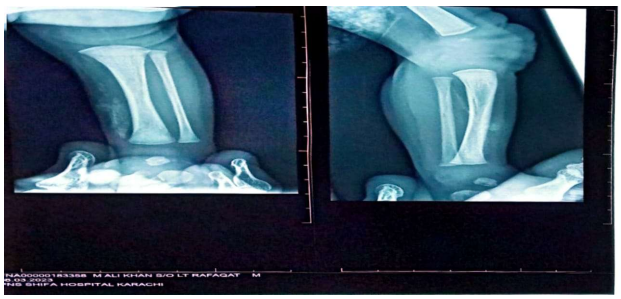
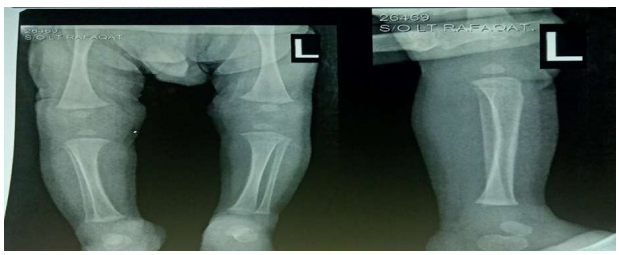


Figure-3 of repeat X-ray after 04 Months shows complete resolution of soft tissue calcification



Case 02: Another patient admitted in NICU for neonatal respiratory distress. He was admitted for 4 weeks. Vascular access was done at right leg for IV fluids and IV injections. He developed swelling, redness over lateral aspect of right leg. On X-ray, there was soft tissue swelling and calcification of right lower lateral aspect of leg without intra osseous extension (Figure-4). Repeat x-ray was done which showed complete resolution of soft tissue swelling and calcification (Figure-5).

DISCUSSION:

Iatrogenic calcinosis cutis refers to an illness which occurs due to deposition of calcium in soft tissues following the

Figure-4 shows subcutaneous soft tissue extra osseous calcification of lateral aspect of leg

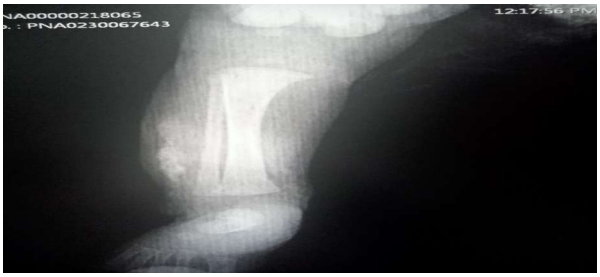
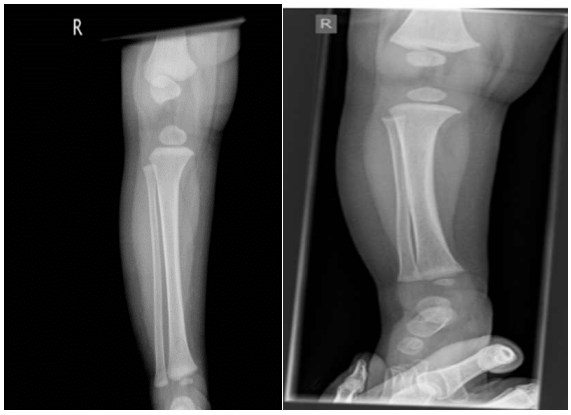


Figure-5 Repeat X-ray after 3.5 Months-Complete disappearance of soft tissue calcification



IV administration of calcium. It occurs due to extravasation of calcium in soft tissues and associated tissue damage leading to localized skin thickening, erythema, pain and tenderness[3]. Broadly, Calcinosis cutis refers to deposition of calcium in soft tissues of the skin and iatrogenic (therapy related) calcinosis cutis is one of the other etiologies, which include certain connective tissue disorder, soft tissue injury, malignancy, and elevated Ca++ and phosphate levels. Initial symptoms include swelling at IV inj access site with overlying reddish discoloration of skin, associated tenderness and warm sensation. Generally, there is no associated itchiness or pus discharge. These findings initially seem to be soft tissue infection; however, afebrile and focal area of involvement at IV inj site help in making a diagnosis and treatment of this benign therapy related complication while excluding other etiologies. Most of the patients of iatrogenic calcinosis cutis usually have fresh history of hospitalization. Other causes of iatrogenic calcinosis include tumour lysis syndrome or numerous heel sticks in infants[4].

Autoimmune connective tissue disorders lead to dystrophic calcinosis cutis, which represents the most prevalent form of calcinosis cutis, accounting for 70% of all the cases[5]. Additionally, a severe variant of calcification, known as calciphylaxis, arises in patients with end-stage kidney disease. It causes arteriolar calcification and ischemic skin necrosis due to luminal narrowing and thrombosis[6]. Certain skin disorders such as scleroderma and dermatomyositis can also cause calcinosis cutis may be due to delay in starting the

treatment or the severity of the disease itself[7,8]. Imaging or fine-needle aspiration cytology (FNAC) can aid in diagnosis. X-ray findings include subcutaneous soft tissue swelling and calcific foci at IV inj site. Bone scan will show increased tracer uptake at affected site[9]. The differential diagnosis should encompass infection, thrombophlebitis, arthritis, periostitis. Multidisciplinary team approach to diagnosis and management is essential for achieving improved outcomes[10]. A case of neonatal calcinosis cutis who developed swelling at IV inj site with calcium gluconate infusion. The symptoms resolved with conservative management, as in our reported cases, with wound care only[11]. A patient with chronic kidney disease(CKD) undergoing long-term dialysis, experienced iatrogenic calcinosis cutis as result of low molecular weight heparin administration. Symptoms were resolved following successful medical treatment[12]. Diagnosis in CKD patients can be aided by laboratory tests of parathyroid hormone, vitamin D, phosphate, calcium, and renal function. A case of 23 years old female with subcutaneous calcification[13] and another case is of an infant[14], developed multiple subcutaneous tender nodules (of calcinosis cutis) in subcutaneous tissues at different sites after IV calcium gluconate for hypocalcemia. Wound care, discontinuation of IV calcium gluconate and short term follow up lead to complete resolution of subcutaneous nodules. Iatrogenic calcinosis cutis is a benign condition and most of the patients are managed conservatively with proper wound care and follow up (radiography at each visit, laboratory investigation of calcium, parathyroid hormone, phosphate, and vitamin D levels)[14]. Other treatment options include medical and surgical treatment depending upon the size of the lesion (smaller lesions are managed surgically and larger lesions are managed medically) and treatment of specific etiology[15].

CONCLUSION:

The disorder known as iatrogenic calcinosis cutis is benign. In order to rule out other potential etiologies and make a diagnosis, a thorough history and clinical examination are crucial. Regular and thorough examination of the intravenous line site and intravenous calcium dilution lower the risk of extravasation, enable early diagnosis, and avoid needless testing and treatment.

Authors Contribution:
Muhammad Danish: Substantial contributions to conception and design along with acquisition of data.
Asma Afzal Kiyani: Acquisition, analysis and interpretation of data
Sana Sharif: Revising it critically for important intellectual content
Sarah Khan: Drafting the article, contributions to analysis and interpretation of data
Sana Mehmood: Acquisition, analysis and interpretation of data
Huma Hameed: Acquisition, analysis and interpretation of data

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