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Case Report

Calcinosis cutis in a neonate with transient hypoparathyroidism

Sitikantha Nayak[1]*, Baikuntha Narayan Mishra[2], Ranjit Kumar Joshi[1], Prabin Prakash Pahi[1]

[1]Department of Pediatrics, [2]Department of Pediatric Surgery, AMRI Hospital, Bhubaneswar, Odisha, India

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***Correspondence:**
Dr. Sitikantha Nayak,
E-mail: nsitikantha@gmail.com

ABSTRACT

Calcinosis cutis is a condition, where there is deposition of calcium salts in skin and subcutaneous tissue, seen often in the middle to elderly aged population and is rare in neonates and infants. There are many aetiological factors, but in neonates and infants it is mostly seen as complication of extravasation of intravenous calcium infusion or trauma. For uncomplicated cases supportive treatment has been advocated. Authors describe a case presented with calcinosis cutis, who was treated for transient hypoparathyroidism in neonatal period.

Keywords: Calcinosis cutis, Calcium gluconate, Hypoparathyroidism, Neonate

INTRODUCTION

Accumulation of calcium salts in skin and subcutaneous tissues is termed as calcinosis cutis. There are multiple causes of calcinosis cutis in adults, but it is rare in neonates and mostly due to iatrogenic or traumatic reasons.[1] Neonates with risk factors often have hypocalcaemia and Calcium gluconate is used to treat the same, and if extravasated, can lead to calcinosis cutis. They present with swelling and features of inflammation and most often misdiagnosed as soft tissue, bone or joint infection, requiring intensive medications and surgical interventions.[1,2] Early recognition of the condition with supportive care and observation are required for the treatment of calcinosis cutis in neonates, as they have a benign course.[1]

CASE REPORT

A gravida 1, para 1, 35weeks late preterm, 10 days old male child was admitted to NICU with history of respiratory distress and peripheral cyanosis since birth. The baby had low serum calcium level 6.5mg/dl and unregressed moderate Pulmonary Hypertension (PA pressure=35mm). Antibiotics, parenteral fluids, and medications including calcium gluconate were initially administered using the PICC line followed by peripheral veins of both upper and lower limbs. Due to persistent low serum calcium levels he was further investigated and found to have low serum parathyroid hormone (12pg/ml, Normal-15.0-65.0 pg/ml), low vitamin D level (16.59 ng/ml, Normal-20.0-32.0ng/ml) and high serum phosphorus level (9.7mg/dl, Normal 4-7 mg/dl). A diagnosis of hypoparathyroidism was made and the baby was treated with calcium gluconate infusion with oral activated vitamin D (calcitriol) supplementation for a prolonged period and was discharged on day 22 of life after recovery. At 1 month of life he developed swellings in the right upper and lower limbs. Both the swellings were nodular, 5-10 mm in diameter on medial surface of the right lower limb, and 7-15mm in right cubital fossa (Figure 1,2). Both swellings were reddish white, having smooth surface and firm in consistency with tenderness. Joint movements were normal. There was no fluctuation or regional lymphadenopathy. Initially antibiotics were started with a provisional diagnosis of soft tissue infection.

Ultrasonography revealed hyper echoic shadows suggesting calcifications. The diagnosis was revised

based on history, clinical presentation and ultrasound findings, antibiotics were stopped and supportive treatment was given. He was discharged and advised regular follow-ups. Serum calcium and Serum PTH levels were normal with complete disappearance of the lesions within a period of two months.

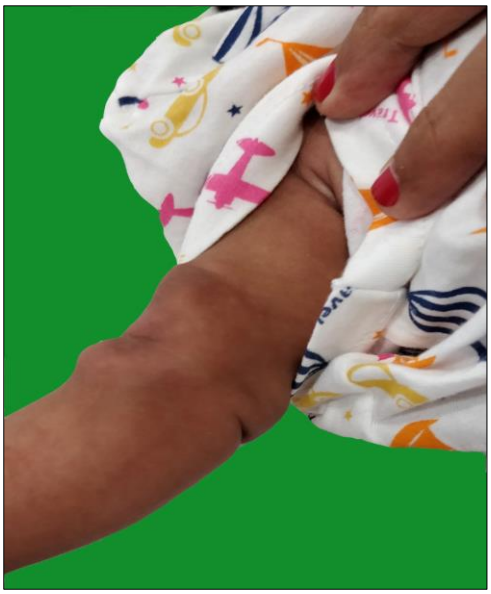

Figure 1: Swelling and erythema on right cubital fossa.

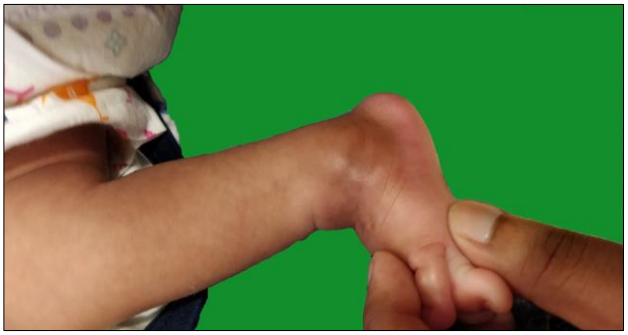

Figure 2: Swelling in the right leg.

DISCUSSION

Calcinosis cutis is a group of disorders characterized by deposition of calcium salts in the skin or subcutaneous tissue. It is associated with autoimmune connective tissue disorder and may ultimately lead to contracture, ulceration, infection and muscle atrophy.[2] In 1855, Virchow had first described the condition. Based on aetiology calcinosis cutis is classified into five major types- Dystrophic, Metastatic, Iatrogenic, calciphylaxis and Idiopathic.[3,4]

In all cases, there is deposition of insoluble calcium compounds in the skin. Metabolic and physiologic factors play important role for development of most of the cases of calcinosis. In neonates and infants it is mostly following trauma or because of extravasation of calcium following intra venous infusion of calcium.[1]

Iatrogenic calcinosis cutis that happens as a complication of intravenous calcium therapy can occur with or without extravasation of calcium solution. There are multiple theories explaining pathogenesis of calcification include multiple attempts to insert peripheral lines, local tissue damage and transient elevation of local calcium concentration due to extravasation of calcium. Local tissue injury increases cytomembrane permeability, allowing influx of calcium into cytoplasm. Increased calcium level leads to precipitation of calcium phosphate in the cytoplasm.[3] Histamine and serotonin released from mast cells have been found to induce local calcification. Calcinosis, that is caused by extravasated calcium leads to degeneration of collagen and soft tissue necrosis. The final step involves formation of insoluble and crystalline hydroxyapatite form of calcium phosphate. The lesions of calcinosis usually appear within 2 weeks, but it may present anytime between 2-24 days following extravasation injury.[5-7] Radiological changes can be seen as early as 4-5 days and maximum changes present at about 2 weeks. Gradual resolution usually takes place and but may take several months.[8] Massive extravasation may cause sloughing of the overlying skin with secondary infection. The presence of local inflammatory signs, frequently leads to misdiagnosis for soft tissue or bony infections like cellulitis, abscess, osteomyelitis, arthritis, thrombophlebitis.[9] The diagnosis is based on clinical presentation, radiological and imaging findings of calcifications.[10]

In our case the baby was diagnosed to have transient hypoparathyroidism requiring prolonged intravenous infusion of high doses of calcium gluconate for hypocalcaemia. There was subsequent tissue damage leading to calcinosis cutis. Though authors initially started antibiotics suspecting soft tissue infection, the diagnosis was revised at the earliest. Authors avoided exposing baby to radiological investigation. Several recommendations are there to decrease the chances of developing calcinosis cutis, such as to give oral calcium preparation when possible. Cannulation sites should be changed regularly and checked for patency before administration of calcium. If extravasation is suspected IV line must be removed. Intralesional steroid infiltration, diltiazem, bisphosphonate and surgical interventions to reduce local signs have been proposed as treatments for calcification of tissues.[2] Symptomatic treatment and observation should be the approach in uncomplicated cases in neonates as it has a benign course. Authors managed conservatively and followed up regularly. The lesion regressed over a period of two months.

CONCLUSION

This case report describes a case of calcinosis cutis in an infant with transient hypoparathyroidism and highlights the need of prevention of extravasation during

intravenous administration of calcium and to allow spontaneous resolution in uncomplicated cases.

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