

Case Report

Calcinosis Cutis Mimicking Infection in a Preterm Infant

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Abstract

Iatrogenic calcinosis cutis presents with similar symptoms and signs of soft tissue, joint and bone infections. We present here a preterm infant with iatrogenic calcinosis cutis misdiagnosed as septic arthritis and osteomyelitis. We hope that our case report helps to raise clinicians' awareness of this rare situation. When swelling and erythema of extremities occur in a newborn infant after intravenous calcium infusion, iatrogenic calcinosis cutis should be considered after rulling out local infections

ABBREVIATIONS

n-CPAP: nasal Continuous Positive Airway Pressure; IV: IntraVenous; MR: Magnetic Resonance Imaging; PPRM: Prolonged Premature Rupture Of Membranes; RDS: Respiratory Distress Syndrome

INTRODUCTION

Neonatal hypocalcemia is a common problem of preterm infants and intravenous (IV) calcium gluconate has been widely used for treatment [1]. When extravasation of calcium gluconate occurs; swelling, erythema, signs of soft tissue necrosis or infection may be seen. Rarely local calcification appears, called calcinosis cutis [2]. We present a preterm infant diagnosed iatrogenic calcinosis cutis, mimicking infection. The aim of this case report is to raise clinicians' awareness of this rare situation.

CASE PRESENTATION

A female infant was born at 33 weeks to a 33 years-old gravida 2, parity 2 mother via cesarean section 30 days after rupture of membranes. Her birth weight was 2140 grams (50th percentile for gestational age). At 27 weeks of gestation cervix was cerclaged because of cervical insufficiency. Due to risk of preterm delivery antenatal steroid therapy was given to mother at the same gestational age. Additionally sulbactam ampicillin was given to mother because of prolonged premature rupture of membranes (PPROM) 10 days before delivery. Preterm infant was accepted to Neonatal Intensive Care Unit due to prematurity and tachypnea. A catheter was insterted into umbilical artery. Chest x-ray and arterial blood gas analysis were unremarkable. She was ventilated under nasal Continuous Positive Airway Pressure (n-CPAP) with 30% oxygen for respiratory distress syndrome (RDS). Antibiotic therapy (ampicillin-amikacin) was begun because of PPRM, preterm birth and RDS. On the second day of life n-CPAP was stopped and two days later umbilical arterial catheter was removed. Swelling and erythema of the

left lower extremity was noticed on fifth day postnatally (Figure 1). Renal and lower extremity doppler USG; renal, hip and knee joint USG and plain radiograph of left lower extremity (Figure 2) were done to differentiate thrombosis, septic arthritis and osteomyelitis. All were reported as normal. Complete blood count, serum C-reactive protein, procalcitonin, liver and renal function tests were unremarkable. We could not rule out infection clinically so ampicillin and amikacin were stopped and piperacillin tazobactam and vancomycin were begun. Despite antibiotherapy; swelling, tenderness and erythema of the left extremity continued. On the fifth day of vancomycin and piperacillin tazobactam treatment, vancomycin was discontinued and clindamycin was added to piperacillin tazobactam because of the possibility of abscess and osteomyelitis, Magnetic resonance imaging (MR) of the leg was done and reported as normal. Then plain-radiograph was repeated 10 days after the first plain film and it showed the calcinosis cutis of left lower extremity (Figure 3). Then retrospectively it was noticed that IV calcium gluconate was injected via peripheral venous catheter of left lower extremity to treat hypocalcemia (ionized Ca: 0.74 mmol/L,



Figure 1 Sweling and erythema of the left leg of infant.



Figure 2 X-ray of the left leg of the infant, before calcification.



Figure 3 X-ray of the left-leg, extraosseous calcifications.

serum Ca:6.7 mg/dl) on the second day of life. Although no severe extravasation was noticed at that time, the diagnosis of iatrogenic calcinosis cutis due to calcium gluconate therapy was made. Serum calcium, phosphorus and alkaline phosphatase levels were repeated, and serum parathyroid hormone level was checked to exclude hyperparathyroidism, all the results were normal. Antibiotherapy was stopped. Initially the local lesion was firm, tender and erythematous, then it became white papule and nodule (Figure 4,5). Inflammation resolved over 3 weeks.

DISCUSSION

Iatrogenic calcinosis cutis occurs due to extravasation of IV calcium infusions such as calcium gluconate and calcium chloride during treatment of neonatal hypocalcemia [3]. If extravasation of calcium is massive, signs of inflammation occur very early but if extravasation is mild inflammation signs may be less marked and calcification is delayed [4]. Signs of inflammation usually appear several days after extravasation of calcium, mean 13 days (range

2 hours to 24 days) [5]. Mu et al studied 103 hypocalcemic neonates who were administered IV calcium gluconate, and the mean period before signs of calcinosis cutis appeared was 7.7 days (range from 5 to 11 days) [6]. Plain radiography is gold standard for diagnosis but are initially negative because calcium solutions used therapeutically are radiolucent. X-ray findings usually appear with in 1-3 weeks [4,6]. In the present case, local signs (swelling and erythema) appeared three days after calcium gluconate administration and extravasation. While first plain radiograph of patient was totally normal, 10 days after calcium gluconate administration x-ray showed calcinosis cutis. Thus it is compatible with the literature

Manifestations of calcinosis cutis may be firm, erythematous, brown to white papules or nodules. The lesion can be tender, warm and fluctuant [3,5]. In the present case initially the lesion was firm, tender and erythematous; then it became white papules and nodules.

The clinical and radiographic findings of iatrogenic calcinosis cutis disappear with in 2-6 months [7]. Similarly our case the lesion cicatrised at the age of 4 months. The pathogenesis of calcinosis cutis caused by extravasation of IV calcium is degeneration and soft tissue necrosis [8]. To prevent this complication, IV 10% calcium gluconate should be diluted to a maximum concentration of 50 mg/ml. A central line should be



Figure 4 Erythema and induration of left leg of the infant.



Figure 5 White nodule of the left leg of the infant.

the preferred way for IV calcium infusion. If a patient needs IV calcium bolus, it should be administered slowly at a maximum rate of 2 ml/minute and its use with anions like bicarbonate, phosphate and sulphate should be avoided. Subcutaneous and intramuscular routes should not be used to avoid tissue necrosis. Ca Gluconate is preferred to Calcium Chloride because the calcium is less likely to precipitate. If extravasation of calcium gluconate is suspected; the catheter must be removed immediately. Cold packs should be applied for 15 minutes four times a day to treat edema at extravasation sites and limb elevation for 48 hours is suggested [9].

Serious complications of extravasation of calcium gluconate are skin necrosis and secondary infection. In these cases mechanical debridement or skin graft should be needed [1,10]. There is no specific treatment of calcinosis cutis, supportive care measures are recommended. Needle aspiration is rarely useful to differentiate it from a pyogenic abscess [1]. Misdiagnosis of cellulitis, arthritis, pyogenic abscess, osteomyelitis and thrombophlebitis are not uncommon in neonatal calcinosis cutis cases [5]. In the present case thrombosis, septic arthritis, osteomyelitis and abscess were suspected initially and antibiotherapy was begun.

If a newborn infant presents with swelling and erythema of extremities after history of calcium extravasation without evidence of infection or thrombosis, iatrogenic calcinosis cutis should be considered and further investigated.

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