



## SUB-CUTANEOUS FAT NECROSIS OF THE NEWBORN

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**ABSTRACT** Subcutaneous fat necrosis is a rare, temporary, self-limited pathology affecting adipose tissue of full term (or) post-mature neonates. It is a rare entity and usually occurs in the first weeks following a complicated delivery. Because it is not very common, diagnosis is easily missed. It may resolve spontaneously without sequelae but patient need to be followed up because of development of late complications especially hypercalcemia. We report a case of SFN of the newborn noted at 5 weeks of age.

**KEYWORDS :** New Born, Sub Cutaneous Fat Necrosis, Birth Asphyxia, Hypercalcemia

**INTRODUCTION**

Subcutaneous fat necrosis of new born is a rare inflammatory disorder of the fat tissue presenting in term and post-term infants<sup>1,2</sup>. It is a lobular form of panniculitis associated with painful, hard & erythematous violaceous nodules. SCFN usually has a favourable prognosis with complete auto resolution of sub-cutaneous lesions within several weeks or months, but it may also be complicated by serious metabolic alterations.

**Care Presentation:**

A 5 weeks old female child was admitted to Government General Hospital, Kurnool, with history of swelling & hardening areas on both arms, back, cheeks and on scalp since 2 weeks of birth and fever for 2 days, vomitings and not accepting feeds.

Birth history revealed that the child was born by induced vaginal delivery in view of eclampsia to the mother with perinatal asphyxia (APGAR 4,5,7), improved with non-invasive ventilatory support and neonatal seizures on 1<sup>st</sup> day of life and discharged with AED's on 14<sup>th</sup> day.

Mother noticed localized hard nodules over buccal fat region at the time of discharge and then later spread to arms, back, gluteal regions, fore-arms. At the time of presentation to the hospital, child had nodular swelling on cheeks, that was flat, firm, attached to overlying skin, reddish and measured about 4 cm in its widest diameter & nodular hardened skin lesions over both arms, scapular regions, gluteal region. A complete blood count showed -Hb-8.99m%

WBC-12,700 (N-48% L-42% M-2% E-2%)  
PLT-2,91,700

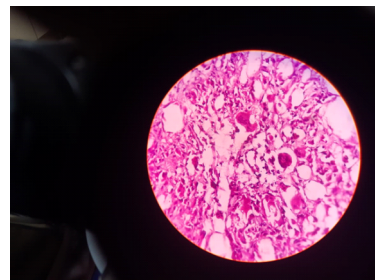
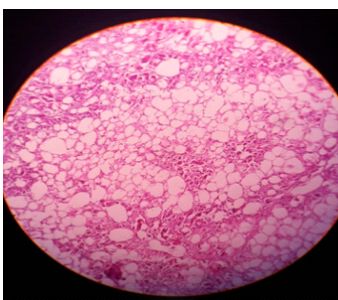
Total ionized calcium - 1.52mmol/l – adequate hydration maintained.

Blood Culture – Positive for klebsiella – antibiotics for 14 days

Sr. Triglycerides – 120 mg/dl

U/s of swelling – S/o inflammatory change in subcutaneous tissue

Excision biopsy done for the lesion over right arm.



Histopathological examination of the lesion – Showed normal epidermis and dermis with underlying subcutaneous tissue showing features of lobular panniculitis made up of plenty of giant cells, histiocytes with sparse mixed inflammatory infiltrate and focal fat necrosis. No needle like structures (or) crystals seen. Biopsy suggestive of subcutaneous fat necrosis of newborn.

The skin lesion started regressing and serum calcium and triglyceride levels were normalised and the child was discharged and on regular follow up in outpatient clinics.

**DISCUSSION:**

Subcutaneous fat necrosis of new born (SFN) is a rare form of panniculitis, an inflammation of the subcutaneous & adipose tissue<sup>1</sup>. It typically affects newborns, it is also known as adiponecrosis subcutanea<sup>2</sup>. It is very rare disorder with no gender predilection. It usually occur in the first several weeks of life as was seen in our index patient. The exact etiopathogenesis is unknown but postulation have been made as to the possible causes. A common theory is that stress, such as that occurring from birth asphyxia in the newborn with immature fat cells induce inflammation, solidification and necrosis. This leads to formation of granulomatous infiltrates<sup>4</sup>. It is linked to multiple neonatal maternal risk factors

**Neonatal RF**

- Umbilical cord prolapsed-
- Meconium aspiration -
- Therapeutic hypothermia -
- Neonatal sepsis -

**Maternal RF**

- Pre-eclampsia
- Maternal DM
- Maternal medication (Calcium channel blocker, cocaine)
- Materno-fetal Rh incompatibility

SCFN is usually a benign condition. Nevertheless, it may be associated with thrombocytopenia, hypoglycemia, hypercalcemia hypertriglyceridemia, these metabolic derangement may in turn represent a possible risk for serious complications<sup>3,5</sup>

Histology of the granuloma have shown increased expression of 1- $\alpha$  hydroxylase known to activate vitamin. D3<sup>6,7</sup>. The increased activity of vitamin D3 causes increased release of calcium. This could account

for the hypercalcemia usually seen in SFN.

Susceptible children who may have to undergo body cooling for management of prenatal asphyxia could also develop subcutaneous necrosis of fat & adipose tissue<sup>6</sup> our patient was exposed to stress from birth asphyxia even though he did not receive body cooling therapy SFN typically occurs in a full term new born as was our index patient.

The typical skin lesion appear as erythematous to purplish, firm, subcutaneous<sup>8</sup> and are usually asymptomatic they may appear on the cheeks, buttocks, back, thigh on upper arm & may be focal (or) extensive some time they may be tender during acute phase<sup>9</sup>. Lesions were first noted in the buccal fat region in our patient, before spreading to involve other part of the body.

Elevated levels of serum Calcium have been noted as a rare complication of SFN and usually occur with disease regression<sup>(10,11)</sup> symptoms of hypercalcemia include lethargy, vomiting, poor feeding, polyuria, fever<sup>12</sup> severe elevations will lead to nephrocalcinosis with progressive reduction in renal function. Screening for hypercalcemia in children with a possible diagnosis of SFN is therefore important to reduce morbidity from hypercalcemia. Hyper calcemia occurs as the skin lesion begins to regress.

Apart from clinical diagnosis, SFN can be further confirmed by histopathology. It shows radially arranged clefts of crystalline triglyceride with in fat cells, granulomatous cellular infiltrate composed of lymphocytes which confirms fat necrosis & presence of histiocytes, multinucleated giant cells and fibroblast<sup>9</sup>

SFN usually self-limiting treatment should aim present, hypercalcemia managing complication of hypercalcemia when present, hypercalcemia managed by diet modification which include low calcium formula, adequate hydration with fluids and calcium wanting diuretics, corticosteroids and bisphosphonates may be used for further management when adequate reduction in calcium levels is not obtained with above measure.

Apart from management, weekly follow up is important up to a period of 6 months to monitor for manifestation of any complication of hypercalcemia.

#### CONCLUSION:

Subcutaneous fat necrosis is a rare finding and can present with complication such as hypercalcemia. Identification of this case needs high index of suspicion for early diagnosis with appropriate intervention and preventing complications from hypercalcemia. Follow up of resolving skin lesions is also emphasized. This will help in reducing morbidity can mortality from SFN in new born.

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