

A Case Report of the Four Month Old Baby with Subcutaneous Fat Necrosis of the Newborns

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Abstract: Background: Subcutaneous fat necrosis of the newborns (syn. Pseudosclerema, Adiponecrosis subcutanea neonatorum (lat)) is a rare transient dermatosis of the newborns characterized by focal necrosis of subcutaneous fatty tissue and a bluish red discoloration of the overlying skin. The lesions are usually the result of manipulation during delivery, neonatal asphyxia, using cold compresses, etc. It is spontaneously resolved over a period of several days to several weeks and months, often without scarring, but in severe cases it can be life threatening disease. The laboratory analysis can register hypoglycemia, thrombocytopenia, hypertriglyceridemia and hypercalcemia. which may be responsible for complications on blood vessels.

Case history: We presented a four month old female infant who first developed a localized erythematous patchy area on the left side of the body, initially diagnosed as congenital hemangioma, and after few weeks it becomes bluish red. After a detailed examination, we found that the lesion on the body includes subcutaneous fat necrosis. The lesion spontaneously regressed over several months leaving a central, punctiform atrophic scar. Except occasional vomiting, neurological examination, ECG, ultrasound scan of heart and kidneys were normal. Laboratory analysis were within normal limits, serum calcium was not over 2,65mmol/l.

Keywords: fat necrosis, hypercalcemia, newborn

1. INTRODUCTION

Subcutaneous Fat Necrosis of the Newborns (SFNN) (lat. Adiponecrosis subcutanea neonatorum s. Pseudosclerema in Anglo-Saxon literature) is a rare transient dermatosis of the newborns born at term or post term neonates [1] characterized by focal necrosis of subcutaneous fatty tissue and a bluish red discoloration of the overlying skin. Lesions are often the result of manipulation during delivery, but other potential causes are also reported and they usually manifest in the first weeks of life. They spontaneously regress over a period of several weeks to a few months, often without scarring. Race and sex have no relevance in this disease.

that cold and stress of immature fat cells during delivery leads to induration and necrosis. In severe

cases, hypercalcemia can lead to more. The exact pathophysiological mechanism of (SFNN) is not completely known. It is suggested complications, which can be life threatening disease. In 1956, for the first time, was described the association of SFNN and hypercalcemia [2]. In the SFNN, an increased level of prostaglandin E2 is also described [3]. An alternative explanation for hypercalcemia includes the release of calcium from necrotic fat cells or elevated level of parathormone that indirectly increases serum calcium level through increased osteoclast activity [4]. Also, direct application of ice compresses on the skin to prevent supraventricular tachycardia and induced hypothermia within cardiac surgery can be a trigger for SFNN [5,6]. In noncomplicated cases, therapy is not necessary, the disease is spontaneously resolved, self-limiting, most often without scarring. Hypoglycemia, thrombocytopenia, hypertriglyceridemia, and hypercalcemia may occur as complications [7]. Data for the reference values of ionized calcium and serum calcium level differs in the literature (total calcium levels are maintained between 2.1 and 2.55 mmol/l according to some authors, or 2,2 -2,7 mmol/l by others). The most serious complication is hypercalcaemia, which can be life threatening because it leads to cardiac disturbances, the formation of calcification in the tissues and organs, and consequently damages cardiovascular and renal system [1,8]. The ECG detects a shortened QT interval, extended T wave, ST segment depression, and bradycardia. It is necessary to limit the ingestion of calcium and reduce its absorption by reducing ingestion of vitamin D. Hydration is very important.

2. CASE REPORT

A female infant, four months old, was sent to the Department of Dermatovenereology, because of a lesion on the skin which was noticed in the first weeks of life.

The following case encompasses the firstborn infant born at term, APGAR score 9. According to the medical history, we find that the changes developed in the first couple of weeks after the birth were diagnosed as hemangioma, which requires further monitoring.

In the following few weeks the lesion was enlarged and it became darker with a depressed center.

Due to the growth of the lesion and thickening of the subcutaneous tissue, the child was sent to examination by a dermatologist.

The mother had preeclampsia, and the delivery was difficult. There are no other significant diseases in the family.

2.1. Dermatological Local Finding

The infant has developed a localized 4 x 2cm bluish-red patchy area of skin on the left side of the body. Clinical examination reveals telangiectasia on the periphery, with a slightly dimpled area of reduced fat in the center and hardened subcutaneous fatty tissue (Fig.1). We consulted a child surgeon who excluded the existence of a hemangioma which was initially diagnosed.



Figure 1

2.2. Clinical Laboratory Findings

Routine laboratory analysis were *within reference range*. Serum calcium level was 2,65 mmol/l. ECG finding was without deviation from normal electrocardiogram. Ultrasound scan of heart and kidneys were normal.

2.3. Dermoscopic Finding

Dermoscopy shows a livid discoloration around the yellowish center with pronounced telangiectasia on the periphery.

2.4. Histopathological Findings

It was suggested biopsy of a lesion with a histopathological verification, but the parents did not allow the proposed procedure. The expected histopathological finding includes oily lobular necrosis, crystallization of fat and lipocytes radially distributed.

The diagnosis was based on the detailed heteroanamnesis, clinical and laboratory tests.

2.5. Therapeutic Approach

Because of the serum calcium value of 2.65 mmol / l, the mother was advised to stop supplementation with

AD vitamin. It is also explained in detail the usual course of this dermatosis, the expected spontaneous regression, and the possible complications associated with potentially elevated laboratory values of some parameters. After a month, on the control examination, the lesion was about 50% smaller (Fig.2)



Figure 2

Following monthly control showed almost complete regression with minimal punctiform residual scar (Fig. 3). Routine laboratory analysis were within reference range. ECG was normal.



Figure 3

3. DISCUSSION

Subcutaneous fat necrosis of the newborns is a rare transient dermatosis (sin. Adiponecrosis subcutanea neonatorum) characterized by solid, painful erythematous nodus and plaques that are most commonly found on the body, hands, thighs and face in neonates born at term but also delivered post term [7,9]. SFNN is usually a self-limiting flux disease but it can be complicated by hypercalcemia, hyperlipidaemia, and other metabolic disorders [7]. Pathogenesis is not completely known, various causes are cited, injuries of immature adipocytes during delivery, low oxygen levels, cold temperature, Caesarian section, large birth weight, infection,...[10,11, 12]. Staining of biopsied

changes shows an elevated level of alpha-hydroxylase in granulomatous infiltrate as seen in other granulomatous conditions such as sarcoidosis [13]. Alpha-hydroxylase allows the conversion of 25 OH D3 into its active form 1,25 OH₂ D₃; later the absorption of calcium in the intestines and its mobilization from the bone, leading to potential hypercalcemia [2,7]. One of the possible pathogenetic mechanisms of hypercalcemia is an increased level of prostaglandins E₂ [3]. An alternative way of explaining hypercalcemia involves an increased release of calcium from necrotic fat cells, as well as an increase in parathormone levels that indirectly increases serum calcium by causing increased osteoclast activity [4]. Hypercalcemia often leads to the formation of calcification in the tissues and organs [8, 14], which is also the most severe complication due to the potential lethal effect caused by cardiovascular and renal system damage [1,14,15,16].

Differential diagnosis may include infantile hemangiomas, erizipel, scleremaneonatorum, other panniculitis, ...Biopsy, in this case punch biopsy, or aspiration biopsy with fine needle [17] serves to confirm the diagnosis, a histopathologic inflammatory infiltrate with giant cells by the type of granuloma and spotting of the necrosis of the fat cells is seen histopathologically. A key histopathological finding includes oily lobular necrosis, crystallization of fat and lipocytes radially arranged [18]

In noncomplicated cases, therapy is not necessary, the disease is spontaneously resolvable, self-limiting, usually without scarring. In case of complications of which the most severe is hypercalcemia, it is necessary to limit the ingestion of calcium and reduce its absorption by reducing the intake of vitamin D. Hydration is important, and one can include calcitonin, corticosteroids - methylprednisolone at a dose of 0.1 mg / kg / TT, citrate and bisphosphonates in resistant cases [11,19,20].

4. CONCLUSION

We presented the female four month old baby whose change occurred in the first weeks after birth on the lateral side of the body, which has been recognized as SFNN. There were no complications in this case, the lesion spontaneously regressed with a minimal punctiform scar, Serum calcium values did not exceed 2.65 mmol / l. All other laboratory analyzes and findings, including glycemia, lipoprotein profile, as well as ECG, ultrasound scan of the kidneys and the heart were within the limits of the reference values.

According to medical history, and detailed anamnesis probably the preeclampsia of mother, hypoxia and manipulation during hard delivery led to the development of SFNN.

SFNN is usually spontaneously resolvable, but it should be accentuated that if this dermatosis is not taken into

consideration and diagnosed on time, monitored and adequately treated, it may result with serious consequences that can even endanger life.

Abbreviations

Abbreviations

SFNN- Subcutaneous Fat Necrosis of the Newborns

Remark

Part of this study was presented as poster at the 14th EADV (European Academy of Dermatology and Venereology) Spring Symposium in Brussels, Belgium, held 25.-28. May

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