

Subcutaneous Fat Necrosis Mimicking a Malignant Mass Associated with the Left Internal Oblique and the Sartorius Muscles in a 3 Months Old Boy: Differential Diagnosis

Üç Aylık Erkek Çocukta Sol İnternal Oblik ve Sartorius Kaslarıyla İlişkili Malign Kitle İzlenimi Veren Subkutanöz Yağ Nekrozu

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ABSTRACT Subcutaneous fat necrosis (SCFN) is a rare, self-limited and benign disorder that develops after birth. A 3-month-old-boy presented with a semi-mobile mass under the skin without erythema on the left inguinal area. Ultrasound (US) revealed a mass within the subcutaneous fat layer over the left internal oblique and the sartorius muscles with heterogenous echogenicity. Computed tomography (CT) showed that the mass had a smooth border with partially spicular extensions to the subcutaneous fat. The presumptive diagnosis was rhabdomyosarcoma. Surgical exploration and excision biopsy were performed. The pathological examination revealed SCFN.

Key Words: Subcutaneous fat; necrosis; infant; ultrasonography; tomography, spiral computed

ÖZET Subkutanöz yağ nekrozu (SKYN), doğumdan sonra gelişen nadir, kendi başına düzelebilen, selim bir hastalıktır. Sol inguinal bölgesinde eritem olmaksızın yarı-hareketli, deri altına yerleşik kitleyle başvuran 3 aylık erkek çocuk değerlendirildi. Ultrasonografi (US), sol internal oblik ve sartorius kasları üzerindeki subkutanöz yağlı tabakada, heterojen ekojenitede bir kitleyi ortaya koydu. Bilgisayarlı tomografi (BT), kitlenin düzgün konturundan subkutanöz yağ içine doğru kısmi fırçamsı uzantılar olduğunu gösterdi. Ön tanıda rabdomiyosarkom düşünüldü. Cerrahi inceleme ve eksizyonel biyopsi yapıldı. Patolojik örneklemeler, SKYN ile uyumlu bulguları ortaya koydu.

Anahtar Kelimeler: Subkutan yağ, nekroz, infant, ultrasonografi, bilgisayarlı tomografi

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Subcutaneous fat necrosis (SCFN) is an uncommon, degenerative, self-limited and benign disorder that occurs after birth and may be associated with hypercalcaemia, hypoxia, birth trauma and hypothermia.¹ We presented CT and US findings of SCFN that mimicked a malignant mass associated with the left internal oblique and the sartorius muscles in a 3 months old boy.

The patient was delivered via cesarean section at 38 weeks without any known problem. He presented to the pediatrician at 3 months of age with a local area of swelling on the left inguinal area, first noted 15 days earlier. His physician palpated a 3 x 2 cm firm, semi-mobile mass under the skin without erythema on the left inguinal area. The hematological and biochemical profile was normal. Initial evaluation was with US, which revealed a 3.7 x 2.5 cm well-circumscribed mass within the subcutaneous fat layer over

the left internal oblique and the sartorius muscles with heterogenous echogenicity showing hypo- and hyperechogenic neighboring areas (Figure 1). Around the mass, there were two lymph nodes, the largest one being 1.2 x 1.1 cm. Colored Doppler US showed no vascularity in the mass. Lymphadenopathy, fibromatosis and a mass originating from the muscle were the presumptive diagnoses. Abdominal CT was ordered to further characterize and to assess the relation of the mass with muscles. The non-contrast CT scan obtained from the other medical center showed a 3.4 x 3 cm mass with a mainly hypodense central area and a hyperdense and smooth border with partially spicular extensions to the subcutaneous fat over the left internal oblique and the sartorius muscles (Figure 2). The remaining abdomen was normal. The mass was considered rhabdomyosarcoma because of the spicular extensions and relation of the mass with the internal oblique and the sartorius muscles. The infant was evaluated by Pediatric Surgery specialists. Surgical exploration and excision biopsy were performed. The pathological specimens showed massive fat necrosis and dense mixed inflammatory infiltrate including lymphocytes, neutrophils, histiocytes, eosinophils and foreign body type giant cells in the adipose tissue (Figure 3a, b).

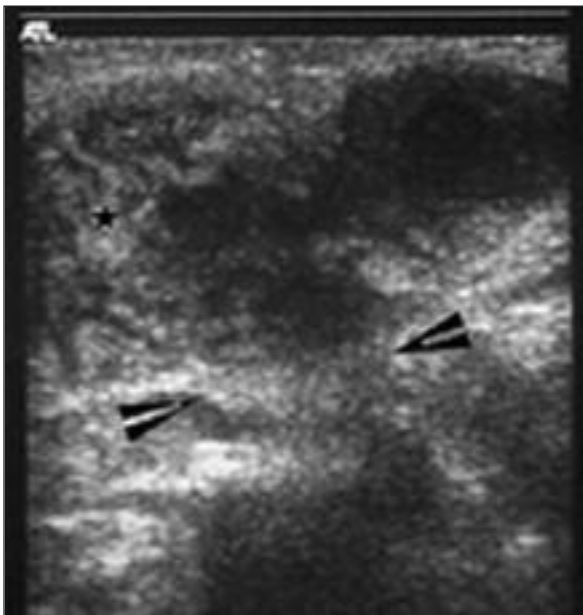


FIGURE 1: Transverse sonographic image of the left inguinal area shows a mass over internal oblique muscle (arrows show muscle). Heteroechoic adjacent contents on the left side of the mass (star).

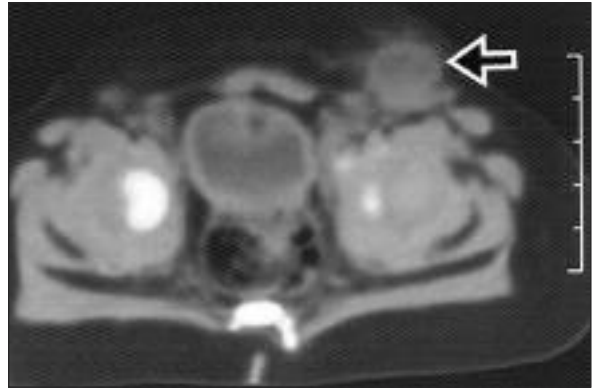
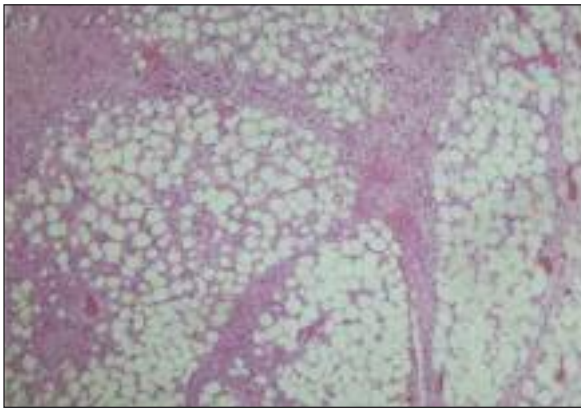


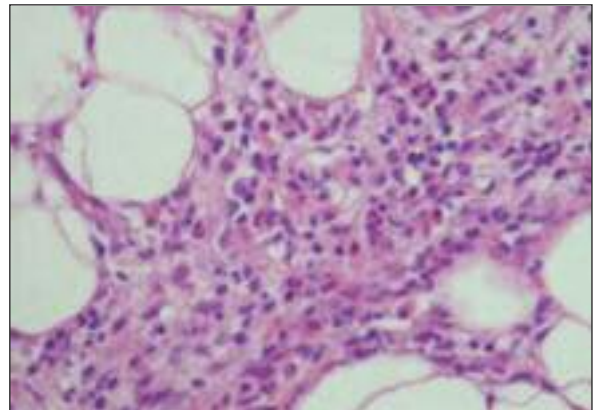
FIGURE 2: Non-contrast abdominal computed tomography shows a mass (arrow) having spicular extensions to subcutaneous fat and related with internal oblique and sartorius muscles in the left inguinal area.

SCFN is a rare, degenerative, self-limited and benign disorder that occurs after birth. The etiology is uncertain but is usually associated with hypothermia, birth trauma, meconium aspiration, hypoxia, preeclampsia and diabetes in mother.¹ Mechanical pressure injury was suggested to cause a local ischemia that led to tissue injury.² The lesions develop on the buttocks, shoulders, thighs, back, cheeks and arms. The lesion in our case was located on the left inguinal area. Previous US findings for this disease were reported as lobulated, hyperechoic mass with hypoechoic areas representing increased vascularity, hypoechoic mass surrounded by hyperechoic capsules or homogeneously hyperechoic areas.^{1,3,4} The US imaging of the current lesion revealed both hypo- and hyperechoic areas. Colored Doppler US also revealed no vascularity in the present lesion, which is in contrast with the findings of the previous report.¹ These US findings suggest a wider spectrum of characteristics for SCFN. Previous studies reported that the CT appearance of SCFN ranged from diffuse subcutaneous thickness to discrete nodules.^{1,5} The mass in this case appeared as a discrete lesion with hypodense central area and hyperdense and smooth border with spicular extensions to the subcutaneous fat over the left internal oblique and the sartorius muscles. SCFN with spicular extensions on CT has not been documented previously in the literature to the best of our knowledge. A malignant mass originating from the muscle such as rhabdomyosarco-



a

FIGURE 3: Adipose tissue with massive fat necrosis and dense mixed inflammatory infiltrate in (a), low (H&E stain, x100) and (b), high magnification (H&E stain, x200) specimens.



b

ma was the presumptive diagnosis considering this finding. Although rhabdomyosarcoma was considered, the histopathologic diagnosis was SCFN with the demonstration of fat necrosis and dense mixed inflammatory infiltrate.

SCFN is a self-limited, benign process. Complications may occur rarely. The most serious complication is hypercalcaemia, followed by thrombocytopenia, hypertriglyceridaemia and hypoglycemia.⁶ Hypercalcaemia may lead to seizures, failure to thrive, weight loss, irritability, apathy, hypotonia and even mortality. The serum calcium levels should be monitored for 6 months in cases with SCFN. Nephrocalcinosis and nephrolithiasis may occur and should be evaluated by renal US. In our case, the hematological and biochemical profile and the US and abdominal CT images of the kidneys were normal.

The differential diagnosis may include lymphadenopathy, fibromatosis, hemangioma, rhabdomyosarcoma and sclerema neonatorum with

different histological findings.¹ Rhabdomyosarcoma, considered also in our case after CT, is a common soft tissue sarcoma in children. It is a rapidly enlarging, solitary and firm mass that originates from the muscle. Images reveal that it is an infiltrating neoplasm with areas of hemorrhage and necrosis. Fibromatosis tends to develop in older children and in other sites that are uncommon for SCFN. It shows homogenous soft-tissue attenuation, with infiltration of the adjacent muscle and bone. Hemangioma of the cutaneous capillary type often appears with discoloration of the skin. Sclerema neonatorum is characterized by diffuse thickening of the subcutaneous adipose tissue and is associated with prematurity. It has a high mortality rate.

In our case, SCFN showed spicular extensions on CT and hypo- and hyperechoic areas on US and the diagnosis was confirmed pathologically. In conclusion, SCFN may resemble a malignant mass on images.

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