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Case Report / Olgu Sunumu

Intraosseous lipoma of the rib

Kaburganın intraosseöz lipomu

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ABSTRACT

A 54-year-old male patient admitted to our hospital with right-sided chest pain. Chest X-ray revealed a large expansive lesion arising from the eighth rib. On his computed tomography, paravertebral localized well-defined expansive lytic 4×3 cm diameter mass was described. Wide *en bloc* excision of seventh and eighth rib was performed. In this article, we report a case of intraosseous lipoma involved in the eighth rib under the review of the literature.

Keywords: Chest wall, intraosseous lipoma, rib.

ÖZ

Elli dört yaşında bir erkek hasta sağ taraflı göğüs ağrısı ile hastanemize başvurdu. Göğüs röntgeninde sekizinci kaburgadan kaynaklanan büyük, geniş bir lezyon görüldü. Bilgisayarlı tomografisinde, paravertebral yerleşimli, iyi tanımlanmış, geniş, litik, 4×3 cm çapında bir kitle tanımlandı. Yedinci ve sekizinci kaburgada geniş *en blok* eksizyon uygulandı. Bu yazıda, sekizinci kaburgayı tutan bir intraosseöz lipom literatür incelemesi eşliğinde bildirildi.

Anahtar sözcükler: Göğüs duvarı, intraosseöz lipom, kaburga.

Intraosseous lipoma is one of the rarest primary benign tumor of the bones. Careful radiologic and pathologic examinations should be performed to avoid misinterpretation. Although some patients present with pain, intraosseous lipoma is usually asymptomatic and the diagnosis is established incidentally.[1,2] In this article, we report a case of intraosseous lipoma involved in the eighth rib under the view of the literature.

CASE REPORT

A 54-year-old male patient admitted to our hospital with right-sided chest pain. No abnormal findings were found in physical examination. Biochemical parameters were normal. Chest X-ray revealed a large expansive lesion arising from the eighth rib. On his computed tomography (CT), paravertebral localized well-defined expansive lytic 4×3 cm diameter mass was described (Figure 1). Whole body bone scintigraphy revealed increased activity involvement in eighth rib (Figure 2). The patient underwent right thoracotomy. In exploration, tumor measured 3×5×3 cm and was bulging from the posterior of the seventh and eighth rib with paravertebral localization. Wide *en bloc* excision of seventh and eighth rib was performed. The lesion had only intrathoracic enlargement and had no relationship with neighboring structures. There was no graft usage need. In histopathological findings, the lesion was surrounded with a hypovascular fibrous capsule. Foci of fat necrosis were described with devoid of medullary trabecular bone. Diagnosis was established as intraosseous lipoma of the rib (Figure 3). The patient had an uneventful recovery and was discharged from the hospital on the fourth postoperative day. No recurrence was observed during his two-year follow-up. A written informed consent was obtained from the patient.

DISCUSSION

Intraosseous lipoma is a benign bone lesion that is considered to be one of the rarest primary bone tumors with a rate of 0.08%.[1] The first case of intraosseous lipoma was described by Child in 1955, with Milgram having published the largest series of these lesions.[2,3] Etiological hypotheses show different

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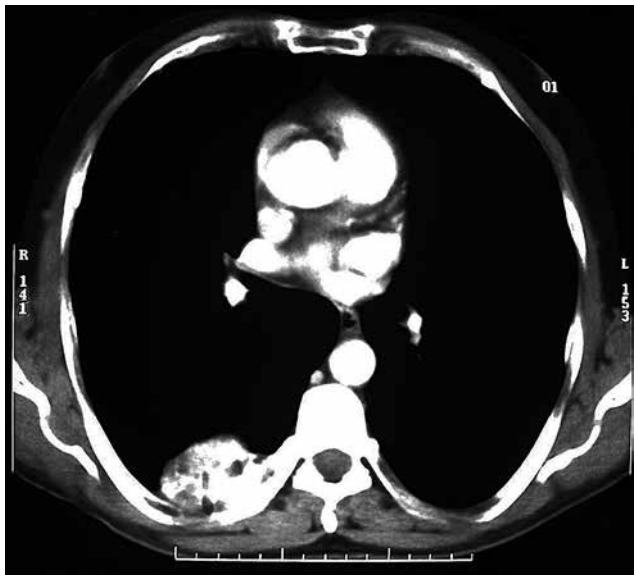

Figure 1. Paravertebral localized expansive lytic mass lesion.

sights to authors. There are some hypotheses suggesting that intraosseous lipomas are primary benign lesions or reactive bone lesions following bone infarct due to trauma. However, there was no major or minor trauma history in our patient for the lesion location. Some authors indicate that hyperlipoproteinemia is responsible for this conglomeration of fatty marrow and is the reason for the lesion. Nevertheless, the bone marrow has adipose tissue while intraosseous lipomas represent less than 0.1 of per 1,000 bone.[4,5] The human body has a rich fat tissue distribution and lipomas and liposarcomas are common while intraosseous lipomas occur as one of the rarest tumors of the bone. In addition, intraosseous lipoma primarily involves the lower extremities, with occurrence in 80% of cases. They are most commonly reported in the metaphysis of the long bones; although ribs have rich fatty bone marrows, generally, intraosseous lipomas are not reported as clinical cases. These conditions contradict such etiological hypotheses.

According to the literature, there was no recurrence after treatment and no other foci development after surgery. Therefore, we think that intraosseous lipoma is a rarely seen primary benign neoplasm of the bone.

Most patients with intraosseous lipoma do not present any symptoms, no age predilection has been defined and the tumor is found incidentally. In symptomatic patients, signs are not specific. Pain and tenderness are the most frequent symptoms.[1,3,5] In our patient, chest pain was the reason for his admittance.

Radiographic appearance of a well-circumscribed lytic lesion, with a central nidus of calcification and surrounding thin sclerotic rim, is diagnostic of an intraosseous lipoma. However; only half of the cases may have this characteristic appearance. Bony expansion, present in approximately 50% of cases, is the most common radiographic feature. Calcification is visible in 35% of cases.[4] In our case, both expansion and calcification were visible in chest X-ray. Aneurysmal bone cyst and giant cell tumor may include the same radiographic appearance with intraosseous lipomas. At this point, whole body bone scintigraphy, CT or magnetic resonance imaging (MRI) is preferred for the radiographic differentiation. Findings on CT

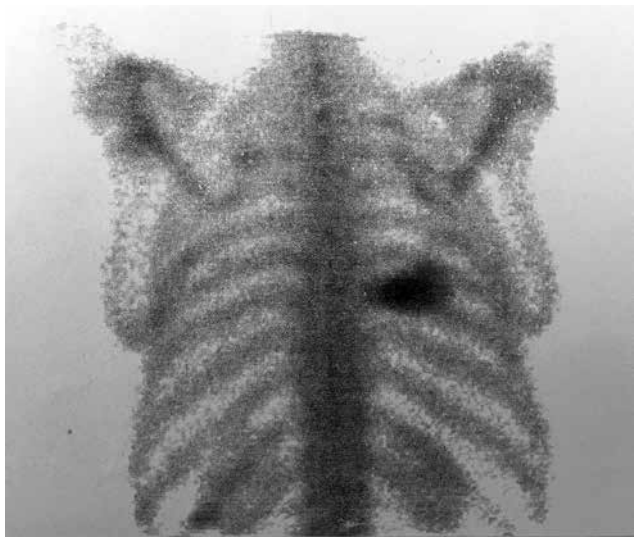

Figure 2. Increased activity of posterior part of eighth rib in bone scintigraphy.

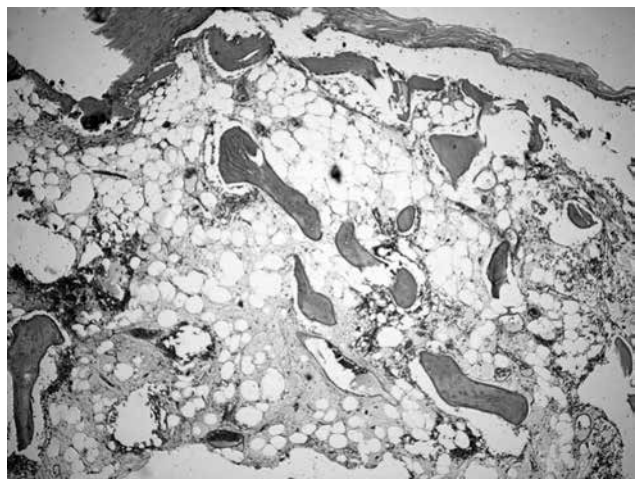

Figure 3. Intraosseous lipoma surrounded by fibrous capsule (H-E ×40).

include osteolytic lesions with intensities equal to adipose tissue. Computed tomography is also useful in detecting pathological fractures and excluding an associated soft tissue mass.[4] In our patient, CT scan showed lytic lesion and the relationship of mass with adjacent organs and tissue.

The appearance of intraosseous lipoma on bone scintigraphy is variable. Three-phase examination may be normal. Alternatively, increased activity at the periphery of the lesion may be identified on whole body scintigraphy. In our case, increased activity of the lesion was identified peripherally. On MRI, the intraosseous lipoma may be well-circumscribed or may have ill-defined margins.[3-5] In our patient, we did not use MRI for the diagnosis since CT imaging showed us the nature of the lesion and also the relationship with the adjacent tissues and organs.

Milgram[3] classified intraosseous lipomas into three histological groups, depending on their degree of involution and radiologic findings. Group 1 lesions are those with viable lipocytes that have irregular radiographic radiolucent area with expansion of the cortex. Group 2 lesions are transitional, consisting of some viable lipocytes and some areas of fat necrosis and radiolucent area which has a calcification in the center. Group 3 lesions are those lacking viable lipocytes with devitalized fat with cyst formation and they demonstrate ossification around the calcified fat. Group 3 lesions may easily be confused with infarcts as they may contain only cystic spaces and necrotic fat.[3,4,6] In our case, lesion was reported as circumscribed with fibrous capsule and to be less vascular. Foci of fat necrosis were described with devoid of medullary trabecular bone. The tumor demonstrated radiologic and histopathologic characteristics that represent group 3 according to the classification of Milgram.

If the lesion is involved in the ribs, primary choice for treatment is surgery with complete wide excision of the tumor since a majority of the tumors of the ribs are malignant. Initially, transthoracic biopsies can be performed for pathological examination; however, after all, surgery should be performed for these patients. Additionally, excisional surgery provides both diagnosis and treatment at one step. Intraosseous lipomas in chest walls may also extend into thoracic cavity and compress the lungs. The expansion of the lungs may be severely restricted, which may result in respiratory failure. Intraosseous lipomas may also extend to the vertebra if located paravertebrally. These extensions may result in neurological disorders when migrated into the vertebra.[2,5] Because of these reasons, surgery should be considered when lesion is diagnosed. According to the width of the excised lesion, graft usage may be needed to avoid paradoxal inspiration and hemodynamic compromise.

Declaration of conflicting interests

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