Respir Case Rep 2020;9(1):16-19 DOI: 10.5505/respircase.2020.72691

Concurrence of a Large Parosteal Lipoma and Osteochondroma on the Chest Wall

Göğüs Duvarında Büyük Parosteal Lipom ve Osteokondrom Birlikteliği

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Abstract

Chest wall tumors are very rare, accounting for 3.26–5% of all thoracic neoplasms. Chest wall tumors may originate from superficial or deep soft tissues, and from bone and cartilage structures. Lipoma is the most frequent benign tumor of the soft tissue, and those localized on the chest wall are often well-demarcated and larger than those that are superficial. A lipoma that is in contact with the bone is referred to as a parosteal lipoma. Osteochondroma (OC) is a common benign primary tumor of the bone that generally occurs between the ages of 10 and 30 years. It is often seen in the long bones, and costal localization is rare. We present here the case of a 28 year-old female patient who developed a parosteal lipoma with intercostal extension together with osteochondroma in the neighboring bone.

Key words: *Lipoma, ostechondroma, costa.*

Özet

Göğüs duvarı tümörleri çok nadirdir ve tüm torasik neoplazmların %3,26 – 5' ini oluştururlar. Göğüs duvarı tümörleri yüzeyel veya derin yumuşak dokulardan, kemik ve kıkırdak yapılardan köken alabilir. Lipom en sık görülen benign yumuşak doku tümörüdür. Göğüs duvarındaki lipomlar genellikle yüzeyel olanlara göre daha iyi sınırlı ve geniş olan derin lipomlardır. Lipom eğer kemik ile temas halinde ise parosteal olarak isimlendirilmektedir. Osteokondrom, kemik dokunun sık görülen, iyi huylu ve genellikle 10-30 yaşlarında görülen primer tümörüdür. Çoğunlukla uzun kemiklerde görülürken, kostal yerleşimleri nadirdir. Biz interkostal uzanımlı bir parosteal lipom ve ilişkide olduğu kemikte osteokondrom olan 28 yaşındaki bayan hastayı sunduk.

Anahtar Sözcükler: *Lipom, osteokondrom, kosta.*

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Submitted (Başvuru tarihi): 07.05.2019 ***Accepted (Kabul tarihi):*** 22.07.2019

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Chest wall tumors are very rare, accounting for 3.26–5% of all thoracic neoplasms. They may originate from soft tissue, bone or cartilage (1). Benign chest wall tumors are often asymptomatic, and usual present as slow-growing palpable masses (2).

Lipomas originating from mature adipose tissue are the most common of all benign tumors of the soft tissue, and can develop in any part of the body (3,4). They are more prevalent between the ages of 50 and 70 years, and in the obese. Lipomas localized to the chest wall are often well-demarcated and larger than superficial examples (2). A parosteal lipoma is a rare benign fatty neoplasm with an intimate relationship to the periosteum. The incidence of this form of tumor is 0.3% among all lipomas (5).

Osteochondroma is a common benign primary tumor of the bone that generally occurs between the ages of 10 and 30 years (6). Osteochondromas account for 10–15% of all bone tumors, and more than 30% of benign bone tumors. Such tumors commonly occur in the long bones, but rarely affect the ribs (7).

Concurrences of lipoma and osteochondroma have rarely been reported in literature (8,9). We present a case here with concurrent parosteal lipoma and costal osteochondroma.

CASE

A 28-year-old female patient presented with an approximately 3–4 month history of swelling in left chest wall. A physical examination revealed a palpable, immobile mass lesion measuring 15x13 cm size at the level of 5th to 8th ribs.

A thorax computed tomography revealed a gross mass lesion on the left side with adipose density, starting adjacent to the medial side of scapula, localized between the bone structure and muscle layer on the chest wall, and extending into the thorax through the destruction of a lateral part of the left 7th rib. The lesion's intrathoracic component had lobulated contours and few thin septa. At its center, the lesion showed an expansible appearance towards the neighboring rib, and contained a bone component approximately 21x30 mm in size that was considered to be reactional (Figure 1A). Thorax magnetic thoracic imaging revealed a cystic heterogeneous lesion of approximately 14x8 cm in size with lobulated contours on the left lateral chest wall, causing the destruction and expansion of the neighboring lateral arches, extending inside the thorax, and causing an elevation of muscle and the subcutaneous layers. The lesion showed no contrast uptake upon the intravenous administration of a contrast material.

Based on these findings, an operation was planned, and a left posterolateral thoracotomy was subsequently performed, for which the muscle layers were separated to allow access to the lesion. The lesion was observed to be a limp, encapsulated mass measuring approximately 15x13x8 cm. The lesion was carefully pushed aside to allow entry to the thorax via the 6th intercostal space. The lesion was fixed to, and had invaded, the 7th rib, extending nearly 4 cm toward the thoracic space. No relationship with the lung parenchyma was observed. Upon separation from the surrounding tissues, the mass lesion was excised via a resection of the rib, including a safe margin of 4 cm at both the anterior and posterior of the rib (Figure 1B). The defect was closed successfully by the muscles and intercostal sutures; no prosthesis was needed for the closure of the thoracotomy.

Pathology reported a parosteal lipoma and osteochondroma of the invaded rib. The surgical border at the 7th rib remained tumor free. The patient was followed up for 3 years without complications.

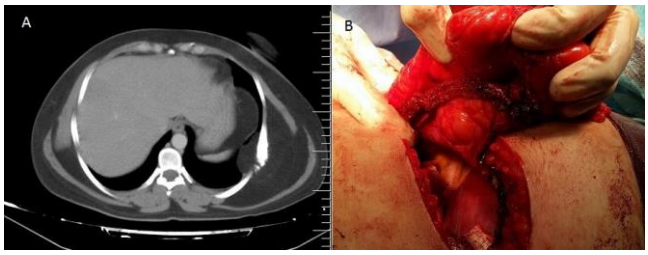

Figure 1: *CT scan of intra and extra thoracic lipoma* ***(A)****, Peroperative view of the intra and extrathoracic lipoma* ***(B)***

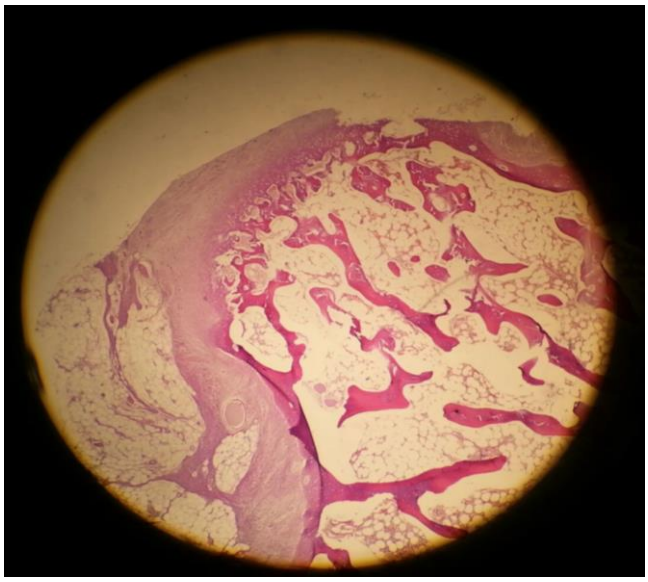

Figure 2: *Osteochondroma on the right side, and overlying mature lipocytes that are compatible with lipoma covering the tissue on the left side (H&E Staining, X40)*

DISCUSSION

Chest wall tumors constitute 2% of all bone and soft tissue tumors (10). Benign chest wall tumors often present as slow-growing palpable masses (3). Şahin et al. (10) reported that 59.2% of patients with such tumors presented with swelling to the chest wall, 27.2% had chest pain (involving the anterior thoracic wall) and 26.2% had lateral chest pain (involving the lateral thoracic wall). Chest wall tumors may originate from superficial or deep soft tissues, or from bone and cartilage structures (1). Chondroma, lipoma and fibroma are the most common of these tumors (10).

Lipomas are the most common of all the soft tissue tumors (3). They originate from mature adipose tissue; they often grow slowly, and are encapsulated and localized superficially or deeply; and they generally require no treatment until they reach a large size (2-4). The case in the present study had a mass measuring approximately 15 cm. Lipomas are generally observed between the ages of 50 and 70, and often among the obese. The case in the present study was 28 years old, and was deemed overweight based on the body mass index (BMI: 29 kg/m2).

Lipomas of the chest wall are generally well demarcated than the more superficial ones, and are deeply located (2). Some lesions may have hourglass appearance with intrathoracic and extrathoracic components. CT and MRI can reveal regularly bordered mass lesions (3). The lipoma identified in the present case had extrathoracic and intrathoracic extensions, and had regular borders according to imaging studies.

Lipomas that are in contact with the periosteum are referred to as parosteal lipoma (11,12). Intraosseous and parosteal lipomas are rare, accounting for only around 0.3% of all lipomas (11). Lipomas can be calcified or ossified. Parosteal lipomas are often associated with cortical hyperostosis, bowing deformity and pressure erosion of the underlying bone (12). In the case described in the present study, part of the 7th rib had been destroyed by the lipoma, which then extended into the thorax. More than half of all parosteal lipomas occur after the age of 40. Such lesions often have a hard consistency and are fixed to the bone (12). The case in the present study was 28 years old, and while her lesion was deeply located, it could be palpated as slightly limp and immobile mass. Imaging studies revealed a parosteal lipoma fixed to the 7th rib.

Osteochondroma is a common benign primary tumor affecting bone tissue (6). Its prevalence among the general population is 3%. It constitutes 10–15% of all bone tumors and more than 30% of all benign bone tumors (7). It occurs frequently in the 1st to 3rd decades as either single or multiple lesions (6). In an osteochondroma case series of 11 patients, Oruç et al.(7) reported that eight patients in the study were male and three were female; the mean patient age was 27.4 years, and osteochondroma was localized to more than one rib in seven patients, a single rib in three patients, and the scapula in one patient. Consistent with the literature, the case presented here was in second decade of life, and had a single lesion.

The first case of osteochondroma of the rib ever to be reported was described in 1975 by Twersky et al. (6). Osteochondroma is rarely observed outside the long bones (7). It is reported to originate from perichondral defects at the border of the growth plate, and is primarily observed in the cartilaginous areas of the long bones (6), and may rarely be localized to the ribs. In general, 2% of all osteochondromas are localized to the ribs (1,6,7). Osteochondromas of the rib often originate from the osteochondral junction or the vertebral end (1,2,7). The lesion in the present case, however, originated neither from the osteochondral junction nor the vertebral end, but, interestingly, from the lateral part of the rib.

Clinically, osteochondromas are often painless. Symptomatic cases may present with neurological symptoms due to the compression of the neighboring nerves along with the palpable mass (6,7). Costal osteochondroma may present with chest pain, pneumothorax, thoracic outlet syndrome, empyema, hemothorax or laceration of the diaphragm (7). The case in the present complained only of a painless swelling caused by the lipoma.

In a chest X-ray, osteochondroma of the rib may appear as a mass associated with the normal bone (6,7). Such lesions may sometimes confused with pulmonary lesions on an X-ray, and so the localization of the lesion may not be revealed (1,7). Lesion localization, association with the neighboring tissues and morphology can be clearly identified with thorax CT and MRI (2,6,7), and such imaging may provide information about the vascularity of the lesion (2). In the present case, CT and MRI revealed an expansile appearance at the left 7th rib.

Complications associated with costal osteochondroma include pathological fracture, osseous deformity, vascular injury, neural compression and malignant transformation (2), although malignant transformation is rare, with a 1% risk in solitary osteochondroma cases and a 10% risk in multiple cases (1,2). Marcove et al. (13) concluded that

osteochondroma smaller than 4 cm were benign. Pain at the lesion site, radiological thickening of the cartilage cap (over 2 cm), erosion of the bone and irregular calcification may indicate a malignant transformation (2,6). Elderly patients have higher malignant potential (7).

Due to the risk of malignant transformation, the recommended treatment for osteochondroma is total resection (1,6,7). In our case, we performed resection of the rib including a safe margin both anteriorly and posteriorly so as not to leave any tumor within the surgical borders.

Concurrences of parosteal lipoma and osteochondroma have rarely been reported in literature (8,9). To the best of our knowledge, there have been only two cases of concurring parosteal lipoma and osteochondroma, and one case of concurring parosteal lipoma and osteochondromatous proliferation (Nora's Lesion) (8,9,14). The case in the present study is the first to be reported on the ribs, while the previous cases reported in literature were at the hallux, humerus and proximal phalanx. The case in the present study had a parosteal lipoma together with osteochondroma of the rib to which the lipoma was fixed.

CONCLUSION

The concurrence of parosteal lipoma and osteochondroma on the ribs is exceptionally rare. Chest wall tumors should be resected due to the potential malignant transformation and compression of neighboring tissue.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - A.B., A.H.A., C.T.; Planning and Design - A.B., A.H.A., C.T.; Supervision - A.B., A.H.A., C.T.; Funding -; Materials -; Data Collection and/or Processing - A.B., A.H.A.; Analysis and/or Interpretation -; Literature Review - A.B.; Writing - A.B., A.H.A.; Critical Review - A.B., A.H.A., C.T.

YAZAR KATKILARI

Fikir - A.B., A.H.A., C.T.; Tasarım ve Dizayn - A.B., A.H.A., C.T.; Denetleme - A.B., A.H.A., C.T.; Kaynaklar -; Malzemeler -; Veri Toplama ve/veya İşleme - A.B., A.H.A.; Analiz ve/veya Yorum -; Literatür Taraması - A.B.; Yazıyı Yazan - A.B., A.H.A.; Eleştirel İnceleme - A.B., A.H.A., C.T.

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