Multiple Hamartomas (Mesenchymomas) of the Unilateral Chest Wall in Infancy: CT Findings

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Abstract

A case of multiple hamartomas of the unilateral chest wall in a four month old infant is presented. There have been a few reports on the CT findings of the chest wall hamartoma in infancy. We describe bone changes of the ribs and mineralization of this rare tumor on the CT scan, and the locations of two separate masses.

Index Words: Infant, newborn, skeletal system
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Hamartoma

Chest wall hamartoma (mesenchymoma) is very rare in infants. This mass usually presents at birth and as a single, extrapleural mass arising from one or more ribs. A few cases of multiple hamartomas have been reported (1-4). Yet, the cause and incidence of multiple lesions are unknown.

We have performed whole body bone scan with 99m Tc-MDP and CT scan, and describe the CT findings of multiple hamartomas of the chest wall and the locations of two separate lesions.

CASE REPORT

A four month old male infant was admitted to our hospital with productive cough for 1 month. A chest radiograph showed a large mass (about 4 x 5 x 7 cm) of the left thorax, destroying 3rd and 4th ribs, and focal thinning of 2nd, 5th ribs (Fig. 1). Another small mass (about 2 x 3 x 3 cm) arising from the costovertebral junction of the left 10th rib, separated from the above lesion, was found after the whole bone scan with 99m Tc-MDP (Fig. 2). Adjacent 9th and 11th posterior ribs were eroded by this mass. Faint, irregular mineralizations were noted within these two masses.

On CT scan, the soft tissue masses containing conglomerate, spiculated calcific and ossific densities were not surrounded by the cortical bone. Underlying ribs showed the cortical expansion and destruction, and increased density of medulla (Fig. 3a). Focal low density was suspected within the large mass. The left transverse process of the 10th thoracic vertebra was involved by the small mass located in the costovertebral junction (Fig. 3b).

 Portions of the left 2nd-5th ribs and 9th, 10th ribs with these masses were removed. The chest
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In most of the previous reports, the chest wall hamartoma had been presented as a single mass (1-8). In 1964, Hopkins and Freitas (4) reported a case of bilateral osteochondromas of the ribs in an infancy. But Dahlin (5) contended that these bilateral masses most likely were benign

### DISCUSSION

In most of the previous reports, the chest wall hamartoma had been presented as a single mass (1-8). In 1964, Hopkins and Freitas (4) reported a case of bilateral osteochondromas of the ribs in an infancy. But Dahlin (5) contended that these bilateral masses most likely were benign

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**Fig. 1.** Chest radiograph shows a large mass in the left chest wall with partial destruction of the 3rd and 4th ribs. A small mass (arrows) arising from the costovertebral junction of the left 10th rib is poorly seen. Adjacent 2nd, 5th and 9th, 11th ribs are eroded by these masses.

**Fig. 2.** Posterior image of 99m Tc-MDP bone scan shows high activities within two masses.

**Fig. 3.** a. Axial CT scan demonstrates a well demarcated mass occupying much of the left hemithorax. Conglomerate, spiculated calcific and ossific densities are seen within a large mass. Increased density of the intramedullary portion of the 3rd rib (arrow) is noted.

b. CT scan 6 cm lower than Fig. 3a shows a small mass of the left 10th rib, destroying the left transverse process of 10th thoracic vertebra. It also contains clumpy calcific and ossific densities.
Resected tumor, contiguous to the ribs, shows a solid portion and a blood filled cystic component (white arrows). The 3rd rib shows the cortical destruction and the intramedullary calcification (arrows).

Chest wall hamartomas. Thereafter a few cases of multiple hamartomas of the chest wall have been reported in the English literature (1-4).

The plain radiographic findings were reviewed by many authors (1-7). But the CT features of the chest wall hamartoma have not been well documented (3,7,8). Histopathologically this lesion typically has cyst-like portion filled with blood and solid, chondroid area with fibroblastic proliferation, and significant amounts of mineralization (1-3,5-7).

Initially we missed a small mass of the left lower thorax on a chest radiograph. But whole body bone scan with 99m Tc-MDP was helpful in the reappraisal of chest radiograph due to intense uptakes of radiopharmaceutical by these masses, even though the mass size varied greatly. This finding may suggest that extensive mineralization and formation of ossifying trabeculae are present without regard to the mass size. Gwyther (3) noted that uptake is dependent on the relative rate of growth and proportion of cartilagenous and vascular component.

Schlesinger et al (7) reported the CT and MR findings of a case of chest wall hamartoma and correlated the MR features with gross pathology. One of the CT findings they described in their case was that the epicenter of the chest wall mass was in the rib as cortical bone surrounded the mass. On the contrary, CT scans of bone window setting did not demonstrate cortical bone surrounding the periphery of mass in the patient we present. We think that cortical change of the ribs may depend on the degree of cortical expansion and destruction by the intramedullary soft tissue mass.

Conglomerate, spiculated calcifications and ossifications within th masses were more well defined on the CT scan than those noted on the plain radiograph. Increased density adjacent to the intramedullary soft tissue mass was revealed as the mineralized portion of hamartoma. Focal low density within a large mass corresponded to the cyst-like blood filled space of the specimen.

Oakley et al (1) reported that it tended to involve the main body of the rib and lie away from the costochondral or costovertebral junction. In our case, a large mass involved the main body of the ribs, but a small one was located in the costovertebral junction of the rib and involved the left transverse process of 10th thoracic vertebra. These findings may indicate that the location of chest wall hamartoma is not unique.

Two separate hamartomas of the unilateral chest wall is extremely rare. Detection of another small mass, similar to the radiologic pattern of a large mass, may suggest a metastasis. A benign hamartoma may be mistaken for a malignant lesion because of following radiologic findings; cortical destruction and involvement of multiple ribs or adjacent bone as in the case we encountered. But the characteristic plain radiographic and CT findings such as an extrapleural mass arising from one or more ribs, cortical destruction or expansion of the ribs, extensive mineralization and some cyst-like portion within the mass, and the patient age will aid in making the correct diagnosis. CT is very helpful in the evaluation of bony change of the ribs and the areas of mineralization within hamartoma as well as its extension.
REFERENCES