Intrathoracic Hibernoma: An Uncommon Tumour

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ABSTRACT

Hibernomas are uncommon benign tumours that arise from the remnants of fetal brown adipose tissue. They are usually asymptomatic and have a slow growth pattern. Intrathoracic and pleural locations are exceptional for localization of hibernoma. A review of the English language medical literature revealed more than 110 cases, 20 of which were intrathoracic. In the article below, we discuss a 40-year old male patient who had pleural involvement and was treated by surgical resection. Following resection, the patient has remained problem-free for nine years.

Keywords: Brown fat, hibernoma, intrathoracic, soft tissue neoplasm, thoracotomy

Hibernoma Intratorácico: un Tumor Poco Frecuente

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RESUMEN

Los hibernomas son tumores benignos poco frecuentes que surgen de restos del tejido adiposo marrón fetal. Son generalmente asintomáticos y tienen un patrón de crecimiento lento. Las localizaciones intratorácicas y pleurales son excepcionales para la localización del hibernoma. Una revisión de la literatura médica en lengua inglesa reveló más de 110 casos, 20 de los cuales se trataban de hibernomas intratorácicos. En el siguiente artículo, discutimos el caso de un paciente de 40 años de edad, que tenía una afección pleural y fue tratado con una resección quirúrgica. Después de la resección, el paciente ha permanecido sin problemas durante nueve años.

Palabras claves: Grasa parda, hibernoma, neoplasia del tejido suave, intratorácica, toracotomía

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INTRODUCTION

Benign soft tissue tumours morphologically resembling the brown fat of the human embryo or the interscapular gland of hibernating animals were first recognized over one hundred years ago (1, 2). In human embryos, brown fat was found in the interscapular region, similar to hibernating animals, in the neck and axillae, mediastinum, parietal pleura, omental, peri-adrenal and perinephric fat, groins and in the peripheral parts of the limbs (1). Brown fat was first described by Velch in 1670 and the term hibernoma was coined by Gery in 1914, because of its similarity to brown fat cells found in the glands of hibernating animals (2, 3). Intrathoracic localization of hibernoma is uncommon and a recent review of the English language medical literature revealed only 20 intrathoracic cases to date.

CASE REPORT

A 40-year old man was referred to the Department of Thoracic Surgery of our hospital because of a giant intra-thoracic mass, which was discovered on chest radiography. The patient had symptoms of flu and cough and a large intra-thoracic mass was observed incidentally when examining chest radiographs. Findings on physical examination and laboratory tests were normal. His medical history was unremarkable, without any chest illness.

The chest radiograph showed a mass located in the left lower hemithorax, which was smooth, rounded, non-cavitary and non-calcified (Fig. 1a). A computed tomography (CT) scan of the chest showed a 6 x 7 cm smooth, rounded intra-thoracic mass arising from the anterolateral aspect of the left

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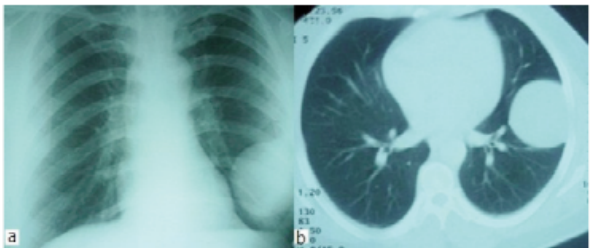

Fig. 1 (a): Giant intrathoracic mass located in the left lower hemithorax; (b) computed tomography (CT) of thorax revealed a left intrathoracic mass.

side of the pleura (Fig. 1b). As the mass was peripherally located, no fiberoptic bronchoscopy was performed for diagnosis; needle biopsy was also excluded due to the suspected highly vascular nature of the mass and associated risk of haemorrhage. With no confirmed diagnosis, a decision was made to resect the lesion.

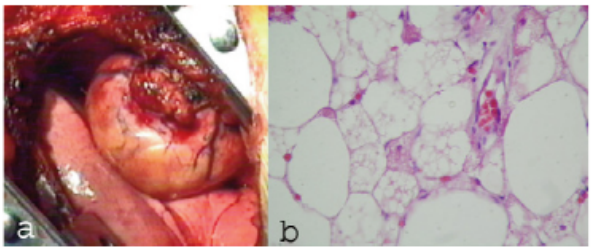

Fig. 2 (a): Macroscopic examination of the mass; (b) typical microscopic pattern of hibernoma with organoid arrangement of large cells, centrally located nucleus and cytoplasm filled with many small vacuoles (HE; X 400).

A left posterolateral thoracotomy was performed at the level of the fifth intercostal space. A well-encapsulated, lobulated, yellowish-brown mass (8 x 7 x 5 cm) was visualized, arising from the parietal pleura of the anterior chest wall (Fig. 2a). The intrathoracic mass was completely removed without complication and the patient was discharged on the seventh postoperative day.

In macroscopic examination, the encapsulated mass had a cut surface of yellowish-brown colour; microscopic examination showed an organoid arrangement of large cells with centrally located nucleus and a cytoplasm filled with many small vacuoles (Fig. 2b). These macroscopic and microscopic findings were suggestive of a hibernoma. No atypical mitoses were observed and a diagnosis of intrathoracic hibernoma was made without difficulty. Resection margins were free of tumour. The patient made an uneventful recovery and he has remained problem-free during a nine-year follow-up period.

DISCUSSION

Hibernoma is an uncommon, benign soft-tissue tumour arising from fetal brown fat (2). It usually occurs in the interscapular region, axilla and groin; intrathoracic and pleural localization is uncommon (4, 5). Up to 1996, approximately 100 cases were reported, of which only seven were intrathoracic (2).

Hibernomas occur mostly in adults, with a peak incidence during the third or fourth decade of life, with no predominance of sex distribution (3, 6). Clinically, hibernomas are usually asymptomatic, painless tumours and have a slow growth pattern. They are often identified incidentally during chest X-rays for routine controls or for other pathologies, as in our case. Although these tumours are always benign, they tend to grow to large sizes, sometimes causing symptoms, which are often related to compression of adjacent structures (4, 6).

They can be seen on chest radiographs as smooth, rounded masses. Hibernomas have CT appearances similar to other benign and malignant fibrous and lipomatous tumours (4). Thoracic CT scans show the circumscribed, encapsulated nature of the mass with homogeneous low density owing to its predominantly lipid composition (2). Hibernomas usually demonstrate intense fluorodeoxyglucose accumulation on positron emission tomography (PET) scanning (4). This can be explained by increased mitochondrial activity and a high rate of glucose metabolism present in brown fat cells, rather than by tumour activity (4).

As they appear similar to other fibrous and lipomatous tumours on thoracic CT scanning, histopathological analysis is always necessary for correct diagnosis (6). A case reported by Ong *et al* mentioned that due to the highly vascular nature of hibernoma, needle biopsy carries the risk of haemorrhage (2). Therefore, complete surgical resection is always recommended for diagnosis and treatment of hibernoma (4, 6).

Grossly, hibernomas are encapsulated and lobulated tumours with a typical microscopic pattern. Microscopically, an organoid arrangement of large cells with centrally located nucleus can be observed. The cytoplasm of these large cells contains many small vacuoles; similar microscopic findings were observed in our case.

No recurrence has been reported following complete surgical resection (4). Furlong *et al* evaluated 66 patients with a mean follow-up period of 7.7 years (7). As many of these tumours were completely excised, the authors reported no local recurrences and described no cases of metastasis (7). No adjuvant therapy is required for hibernomas, according to Ong *et al* (2).

CONCLUSION

As the routine use of chest radiography increases, most of such tumours will be detected as asymptomatic opacities. We suggest that intrathoracic hibernomas should be included

among the differential diagnoses of thoracic masses found incidentally in an asymptomatic patient.

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