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Fine Needle Aspiration Cytology of Myxoid Chondrosarcoma of Pleura
-A Case Report-

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=Abstract=

A 70-year-old female who was diagnosed as myxoid chondrosarcoma by fine needle aspiration of a pleural mass is described. She presented with left chest discomfort of 4 months' duration and aggravating dyspnea and chest pain for 2 months. Chest X-ray and CT scan revealed a large lobulated low density mass invading chest wall at the left pleural cavity and massive pleural fluid. Fine needle aspiration was done under the impression of mesothelioma or metastatic cancer. The aspirates from the mass were very cellular and composed of isolated or clustered forms of large plump cells. Abundant cytoplasm was bluish opaque and the margin was rounded in the isolated cells, whereas clustered cells show ill-defined cell borders and aggregating tendency. The nuclei were eccentric, round to ovoid, and had fine chromatin pattern and multiple small nucleoli. Cellular pleomorphism or mitotic figure was not definite. These findings were consistent with cytologic features of chondrosarcoma. Final diagnosis was confirmed as myxoid chondrosarcoma by mediastinoscopic biopsy and the tumor showed strong positivity for S-100 protein.

Key Words : Myxoid chondrosarcoma, Pleural mass, Aspiration cytology.

INTRODUCTION

Myxoid chondrosarcoma is a rare neoplasm which has distinctive histologic and behavioral characteristics[1]. In spite of the absence of well-demarcated cartilage, the gross, light microscopic, histochemical, and electron microscopic findings support a chondroblastic origin of the tumor[1]. Recently fine needle aspiraton cytology on primary bone tumors including chondrosarcoma accumulated the accuracy up to 94-95%[2-5]. The sarcomatous nature of this neoplasm

was readily recognized in the cytologic material[6], although histologic and ultrastructural studies were necessary to establish its specific histologic type. This report describes the cytologic findings of a case that was histologically diagnosed as myxoid chondrosarcoma in the pleura.

MATERIALS AND METHODS

The aspirate was obtained from the pleural mass using a 21-gauge needle attached to a 10 ml disposable plastic syringe under the fluoroscopic guidance. It, then, was expelled and smeared on a glass slide, fixed while wet with 95% ethyl alcohol, and stained by the routine Papanicolaou method. Mediastinoscopic biopsy and histochemical staining were performed for histologic confirmation.

CASE PRESENTATION

A 70-year-old female vistited the hospital because of left chest discomfort for 4 months and dyspnea associated with chest pain for 2 months. Chest CT showed massive pleural fluid and a huge lobulated mass with low density, which occupied the left pleural cavity and invaded the chest wall. Also a separate mass was found in the left upper lobe. Malignant mesothelioma and metastatic cancer were considered as the most probale differential diagnoses. Fine needle aspiration under fluoroscopic guidance and a few days later anterior mediastinoscopic biopsy were performed on the pleural mass for diagnostic confirmation.

CYTOPATHOLOGIC FINDINGS

The aspirates from the mass were highly cellular. The tumor cells were seen usually singly, sometimes in sheets or clusters in the presence of mucoid substance (Fig. 1). The isolated cells are large, round

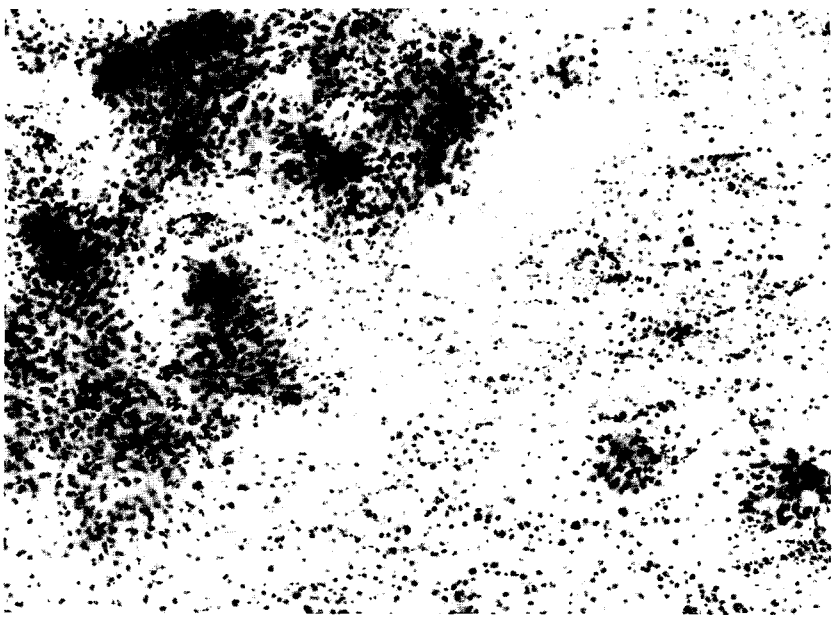

Fig. 1. Highly cellular aspirates containing either isolated or clustered tumor cells (Papanicolaou, ×50).

to oval with abundant bluish opaque cytoplasm that is either foamy or vacuolated. The clustered form consisted of large plump cells with ill-defined cell borders and aggregating tendency (Fig. 2). The nuclei were eccentric and round to ovoid with fine chromatin pattern and distinct nuclear membrane, often provided with multiple small nucleoli (Fig. 3). Cellular pleomorphism or mitotic figure was not prominent and no fragments of chondroid tissue or abnormal cartilage were found. These cytologic findings were suggestive of a kind of chondrosarcoma. Histologically the tumor consisted of rounded or slightly elongated cells of uniform shape and size separated by variable amounts of mucoid material (Fig. 4). The cells possessed small hyperchromatic nuclei and a narrow rim of deeply eosinophilic cytoplasm, features characteristic of chondroblasts. Definite cartilage cells with distinct lacunae were not observed in contrast with chondrosarcoma of bone. Binucleated cells, multinucleated giant cells, and mitoses were scarce. The tumor cells were strongly positive for S-100 protein, weakly stained by vimentin, and negative for cytokeratin, immunohistochemically. The myxoid ground substance stained blue with alcian blue.

DISCUSSION

Extraskeletal myxoid chondrosarcoma is a very rare low-grade malignant tumor first described in 1953 by Stout and Verner[1]. It most commonly occurs in the soft tissues of the extremities but was also reported in the diaphragm and scrotum[6]. Follow-up studies designated myxoid chondrosarcoma with myxoid matrix as a separate entity, for it showed better prognosis than chondrosarcoma with well-formed chondroid from either osseous or extraosseous sites[7]. In recent years a good number of these tumors have been recorded in the literature, including a series of 34 cases from the AFIP files[7].

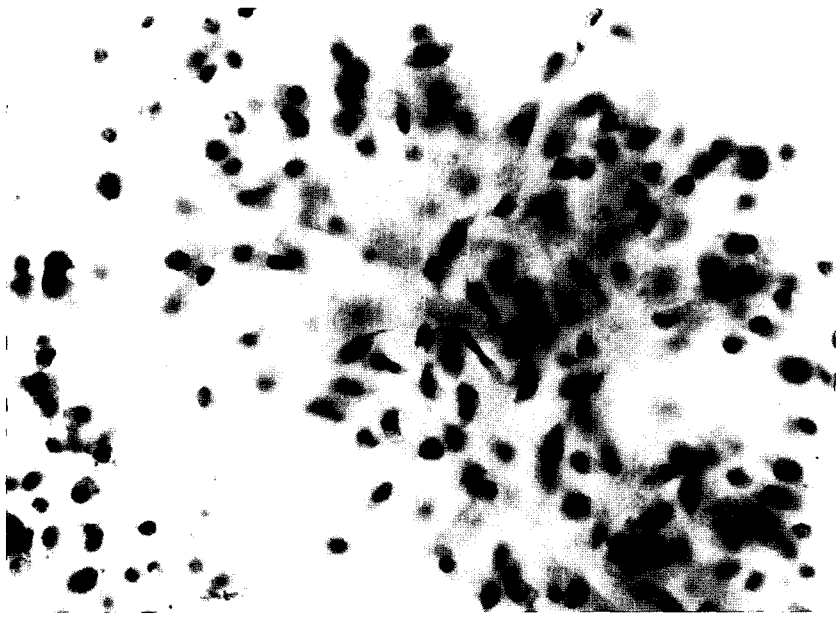

Fig. 2. The tumor cells show ill-defined cytoplasmic borders and bluish foamy cytoplasm (Papanicolaou, ×100).

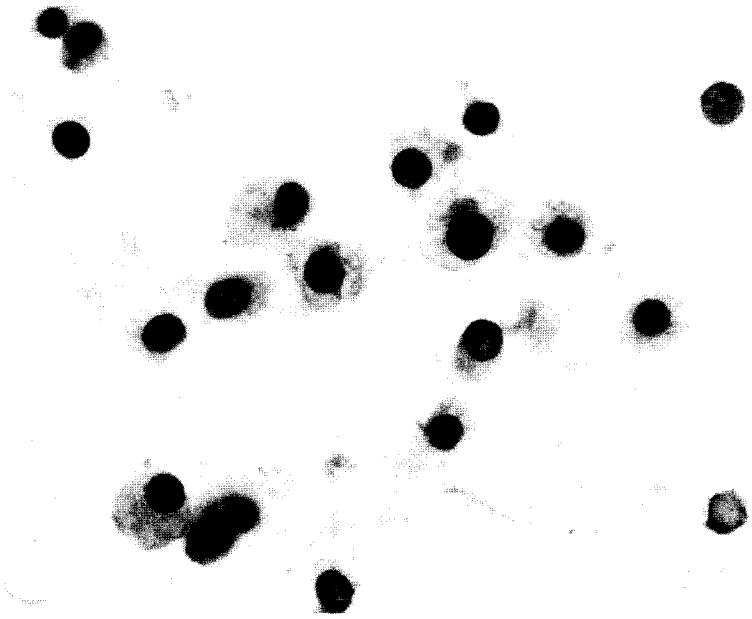

Fig. 3. Isolated tumor cells showing eccentric round nuclei and plump vacuolated cytoplasm (Papanicolaou, ×200).

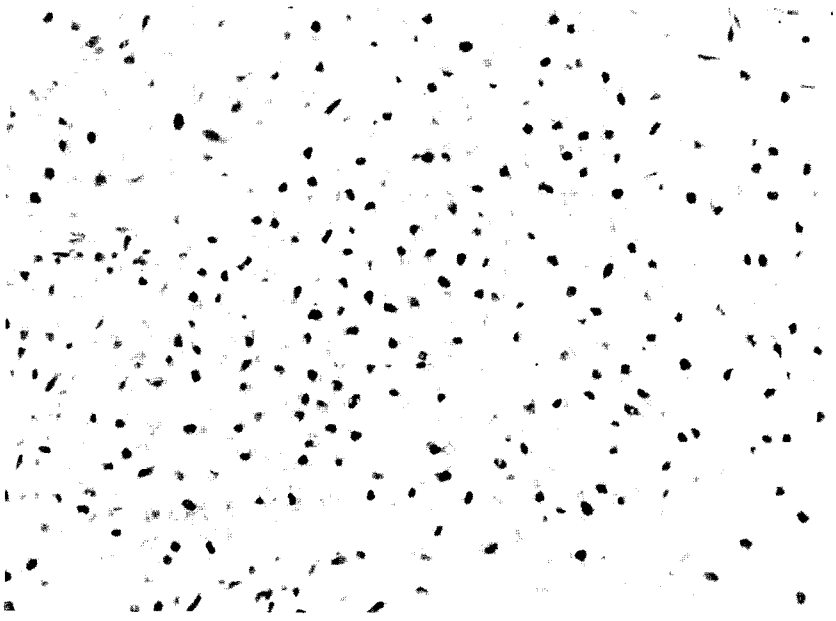

Fig. 4. Histologic finding sowing uniform rounded or slightly elongated chondroblasts surrounded by myxoid cartilaginous materials (H & E, ×100).

However, cytologic findings about extraskeletal myxoid chondrosarcoma have not been described well in the literature until now and common cytologic findings of chondrosarcoma are known as follows : 1) oval or polygonal tumor cells with a vacuolated cytoplasm dispersed or arranged in sheets or loose aggregates, 2) an amorphous pink-violet or light blue background (positive with toluidine or Alcian blue staining), and 3) fragments of chondroid tissue[8]. Thus myxoid and usual skeletal chondrosarcomas practically cannot be differentiated by cytologic smear only, although extent of mucinous background and presence or absene of cartilaginous fragments may be considered as more suggestive of either diagnosis. Our case showed largely rounded or polygonal cells in the background of relatively abundant mucinous materials. Cytologically two another possible differential diagnoses in this case were chordoma of myxoid form and metastatic carcinoma but they were less likely. First of all, location and lack of multivacuolated or physaliferous tumor cells were not consistent with chordoma. The cytologic similarities to metastatic carcinoma occur particularly in the presence of signet ring cells and sheets, but which are smaller and less demarcated than sarcoma cells and do not contain abnormal cartilage[6].

Hence rather distinctive findings same as above in the aspirated material would suggest that extraskeletal myxoid chondrosarcoma could be considered as a differential diagnosis among soft tissue tumors.

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국 문 초 록

점액양 연골 육종 1례의 세침 흡인 세포학적 소견

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70세 여자의 늑막에 발생한 점액양 연골육종의 세침흡인세포학적 소견을 기술하였다. 환자는 4개월간의 좌측 흉통과 2개월간의 호흡곤란을 호소하였고 흉부 X-선 및 전산화 단층촬영상 좌측 늑막강에 위치하여 흉벽을 침범하는 커다란 분엽상 저음영성 종괴와 늑막 삼출액이 관찰

되었다. 종괴의 세침 흡인 도말은 세포 밀도가 매우 높았고, 세포질이 풍부한 난원형 세포들이 점액성 물질내에 산재되거나 간혹 뭉쳐 있었다. 풍부한 세포질은 불투명한 청색으로 소포를 함유하기도 하였으며 그 경계는 흩어진 세포에서는 비교적 분명했으나 세포집단에서는 불분명하였다. 핵들은 한쪽으로 치우쳐져 둥글거나 난원형을 보였고 염색질은 미세하였으며 다수의 작은 핵소체를 갖고 있었다. 세포들간의 다형성이나 유사분열은 잘 관찰되지 않았다. 이상의 소견은 연골육종의 세포학적 특징과 유사했으나 연골 성분이 관찰되지 않았고 점액성 물질이 매우 풍부하여 확진을 위한 생검이 시행되었고 조직학적으로 점액양 연골육종임이 확인되었다.