

The 13th Korea-Japan Joint Meeting for Diagnostic Cytopathology

(20141101@Jeongsun, Korea)

A Case of sarcomatoid mesothelioma of the peritoneum

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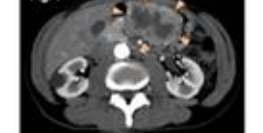
Background

Sarcomatoid mesothelioma of peritoneal origin is a rare malignant neoplasm, so little is known about its characteristic cytologic features. Here, we present the case of a patient who underwent endoscopic ultrasonography-guided fine needle aspiration (EUS-FNA) for cytology. The cytologic findings presented here could be characteristic features of mesothelioma and could be useful for diagnosis, although we could not conclusively diagnose mesothelioma using the cytology results alone.

Case presentation

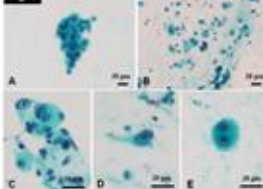
A man in his sixties visited our hospital, complaining of left abdominal pain. Abdominal ultrasonography and computed tomography (CT) revealed a left abdominal mass with central necrosis, approximately 8 cm in diameter (Fig. 1). Angiography revealed that the tumor was supplied by blood vessels from the left lobe of the liver and the celiac trunk. Positron emission tomography (PET) showed high accumulation in the corresponding site. Laboratory examinations revealed distinct leukocytosis. These observations pointed to the possibility of a gastroenteric stromal tumor (GIST), malignant lymphoma, or Castleman's disease. There was no clear history of asbestos exposure.

Fig. 1



Small three-dimensional clusters consisting of atypical cells similar to reactive mesothelial cells were visible. Atypical cells showed mild nuclear pleomorphism (A). Large, isolated atypical cells possessed central or peripheral-located nucleoli that often formed multiple nucleoli (B). Various-sized atypical cells had irregular-shaped and various-sized nuclei (C). An atypical cell showed invagination of the nuclear rim (D). There were a few atypical cells with unclear nuclear rims. These cells were restricted to a very small area (E) (Fig. 4).

Fig. 4



Macroscopic findings

The patient underwent tumor resection. Grossly, the tumor measured 85 × 85 × 84 mm and had a whitish and fleshy cut surface with massive necrosis (Fig. 5).

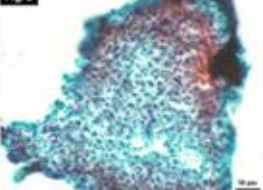
Fig. 5



Cytological findings

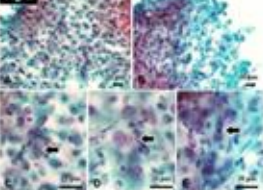
Large clusters of atypical cells with pale cytoplasm and round to oval, often spindle-shaped, hyperchromatic nuclei that often formed multiple nucleoli were observed, associated with lymphocytic infiltration (Fig. 2).

Fig. 2



Panels A and B are high-power views of Fig. 2. Tumor cells had round (C, arrow), oval (D, arrow), or spindle-shaped (E, arrow) nuclei (Fig. 3).

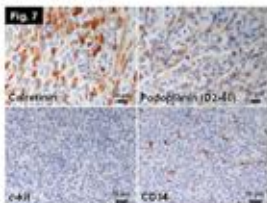
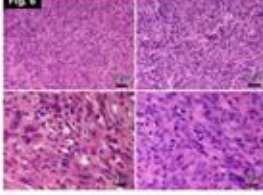
Fig. 3



Histological findings

On hematoxylin-eosin-stained sections, atypical cells showed characteristic patterns with lymphocytic infiltrates. The tumor cells had round to oval, hyperchromatic nuclei, a few of which demonstrated halo-like cytoplasmic profiles (Fig. 6). By immunohistochemistry, the tumor cells were immunoreactive for cytokeratin (CKAM, 3), epithelial membrane antigen, calretinin, and podoplanin (D2-40), but not cytokeratin (AE1/AE3), Bcl-2, Ki-67, carcinoembryonic antigen, c-erbB, or CD14 (Fig. 7).

Fig. 6



Discussion

Peritoneal mesothelioma rarely arises, accounting for approximately 0.2% of all peritoneal malignancies. It occurs predominantly in men aged 60-69 years¹⁾. As with pleural mesothelioma, the exposure of patients to asbestos is a striking risk factor of its tumorigenesis, but our patient did not have any history of asbestos exposure. The sarcomatoid type of peritoneal mesothelioma is much rarer²⁾. Only a few reports mention the cytologic findings of the tumor. However, most of the reports focus on the features determined by asbestos exposure³⁾. To our knowledge, no report has described the cytologic findings of peritoneal mesothelioma tissue specimens obtained by EUS-FNA.

Cytology of the EUS-FNA specimens exhibited large atypical cells in scattered clusters. While most had round to oval, irregular and hyperchromatic nuclei, forming distinct nuclei with pale and abundant cytoplasm, spindle-shaped cells were occasionally seen. These cytologic findings appeared to be sarcomatoid. Malignant lymphoma, Castleman's disease, and neurofibroma were excluded on the basis of the cytologic findings. On the other hand, EUS-FNA specimens showed no specific mesothelioma findings. Thus, our cytologic diagnosis was malignant tumor, not specified.

The histologic diagnosis based on immunohistochemistry was malignant mesothelioma of the peritoneum, sarcomatoid type. Atypical cells similar to those observed on cytology were identified. The characteristic hallmark of mesothelioma are papillary and three-dimensional clusters of cells with unclear nuclear rims, central-located nuclei, and distinct nucleoli. Binucleated cells, ring-like formations, and collagenous stroma with calcifications are characteristic features, as well⁴⁾. Since such findings were not obvious in the cytologic specimens of our case, malignant mesothelioma could not be diagnosed based on these findings alone.

The indication for EUS-FNA has recently been increasing. EUS-FNA specimens from intra-abdominal masses will be more frequently encountered in the near future. The cytologic features of our specimens presented here will provide a helpful information in the diagnosis of malignant mesothelioma on such occasions in the future.

Conclusion

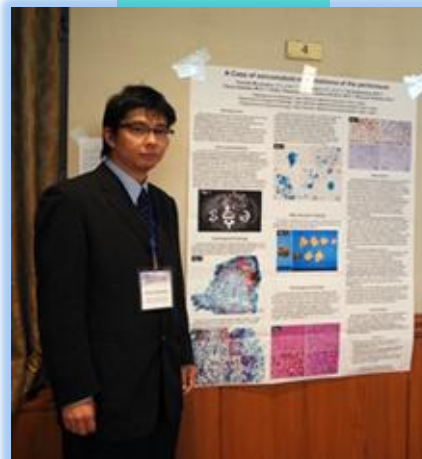
We experienced a case of sarcomatoid mesothelioma of the peritoneum. Cytologic findings of EUS-FNA specimens consisted of large clusters of various-sized and -shaped atypical cells. When cytologic examinations reveal atypical cell findings suggestive of sarcoma, malignant mesothelioma should be included by differential diagnosis.

References

- 1) Cytology of the Serous Surface. In: AFP Atlas of Tumor Pathology, Series 4, American Registry of Pathology, 2008, pp. 11-52.
- 2) Inagaki D et al. A case of localized peritoneal malignant mesothelioma with high nuclei saturation. Jpn J Gastroenterol Surg 42: 127-132, 2008.
- 3) Tanaka F et al. Cytopathological features of asbestos in a case of peritoneal sarcomatoid mesothelioma. J Fore Med Assoc 42: 117-122, 2011.

Disclosure / Conflict of interest:
The authors declare no conflict of interest.

示説発表



指定口演



教室の臨床検査技師でサイトスクリーナーの村松文章氏が、韓国江原道ハイワンホテルで開催された日韓合同細胞診断学会において、英語示説発表(指定口演)を無事終えました。



座長を務める澤田教授(左)



記念写真