A WT1-positive pleural neoplasm. Is it always a mesothelioma?

Diagnostic pitfall of WT1 immunohistochemistry in pleural neoplasm

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A 78-year-old woman presented with unilateral pleural thickening and intraparenchymal pulmonary nodules. The positron emission tomography (PET) scan showed pleural and peritoneal uptake. Clinical hypotheses included a pleural tumour infiltrating the lung or vice versa.

Microscopy of the pleural biopsy showed a malignancy with a predominantly solid architectural pattern and in smaller proportion papillary, composed of epithelioid cells, with scant cytoplasm and several mitosis (Fig. 1). Immunohistochemistry showed the following profile: CK7+; TTF1-; Napsin-; WT1+; Calretinin-; CK5/6-; D2-40-.

TTF1- and Napsin- ruled out a pulmonary origin, however, the positivity found for WT1 should not be considered separately from the rest of the immunohistochemistry, leading to a misdiagnosis of mesothelioma. In fact, the results obtained from the first immunohistochemical panel applied leads to rule out a mesothelial nature as well (Calretinin-; CK5/6-; D2-40-).[1] Therefore, the hypothesis of pleuropulmonary metastasis by a neoplasm with a CK7+/WT1+ profile was raised, and attention was specifically directed toward a serous histotype.

The immunohistochemical panel was then expanded in that diagnostic direction and the result was consistent (Fig. 2): PAX8+; CA125+; p53+; p16+.[2-4]

Radiological/gynaecological investigation showed no uterine or tubo-ovarian masses. The most likely hypothesis, also considering the peritoneal wall PET uptake therefore, was a rare primary peritoneal serous carcinoma.

1. Husain AN, Colby TV, Ordóñez NG, et al. Guidelines for Pathologic Diagnosis of Malignant Mesothelioma 2017: Update of the Consensus Statement From the International Mesothelioma Interest Group. Arch Pathol Lab Med 2018;142(1):89-108. https://doi.org/10.5858/arpa.2017-0124-RA.
2. Anwar A, Kasi A. Peritoneal Cancer. 2022 Feb 24. In: StatPearls. Treasure Island (FL): StatPearls Publishing; 2022 Jan.
3. Laury AR, Hornick JL, Perets R, et al. PAX8 reliably distinguishes ovarian serous tumors from malignant mesothelioma. Am J Surg Pathol 2010;34(5):627-35. https://doi.org/10.1097/PAS.0b013e3181da7687.
4. Attanoos RL, Webb R, Dojcinov SD, Gibbs AR. Value of mesothelial and epithelial antibodies in distinguishing diffuse peritoneal mesothelioma in females from serous papillary carcinoma of the ovary and peritoneum. Histopathology 2002;40(3):237-244. https://doi.org/10.1046/j.1365-2559.2002.01352.x.

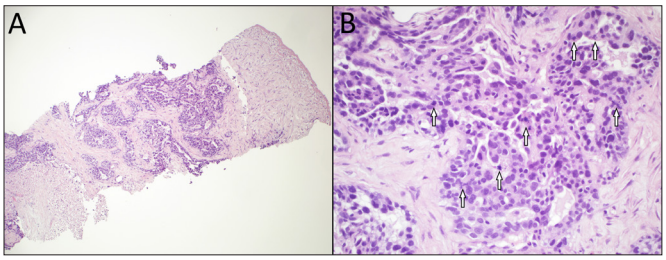

Fig. 1 (A). Photomicrograph (histologic staining with haematoxylin-eosin after formalin fixation and paraffin embedding of the tissue; magnification: 10x), showing an epithelioid neoplasm (in the middle) infiltrating the pleura (on the right) and with areas of necrosis (on the left); (B) photomicrograph (histologic staining with haematoxylin-eosin after formalin fixation and paraffin embedding of the tissue; magnification: 40x), showing a neoplasm with an architectural pattern that is partly solid and partly papillary, and cytologically poorly differentiated and with numerous mitoses (arrows).

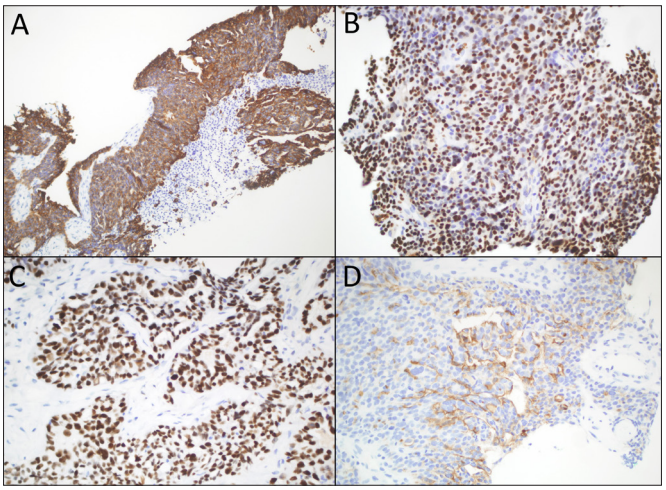

Fig. 2. Photomicrograph, showing the main immunohistochemical markers useful for the diagnosis of serous carcinoma: (A) intense and diffuse cytoplasmic positivity for CK7; (B) intense and diffuse nuclear positivity for WT1; (C) intense and diffuse nuclear positivity for PAX8; (D) membrane positivity for CA125.