De Santis et al., J Clin Case Rep 2019, 9:1
DOI: 10.4172/2165-7920.10001206

Journal of Clinical Case Reports

Case Report Open Access

A Case of Malignant Mesothelioma of the Peritoneum with Sporadic Weak Positivity to TTF-1

De Santis S[1,2], Armentano R[3#] and Cavalcanti E[3#*]

[1]Laboratory of Experimental Immunopathology, National Institute of Gastroenterology "S. de Bellis", Research Hospital Castellana Grotte Bari, Italy
[2]Department of Pharmacy, University of Salerno, Fisciano, Italy
[3]Histopathology Unit of National Institute of Gastroenterology "S. de Bellis", Research Hospital Castellana Grotte Bari, Italy
[#]Equal Contribution

Abstract

Background: Malignant pleural mesothelioma (MPM) is a rare tumor with a challenging diagnosis. Its histological diagnosis is gradual and should be based on morphological assessment, supported by clinical and radiological evidence and immunohistochemistry (IHC). There are many immunohistochemical markers known to distinguish between a malignant mesothelioma and a carcinoma, but, none of the potential antibodies exhibit absolute specificity or sensitivity for both tumors.

Case presentation: We report a case of diffuse mesothelioma of the peritoneum with a misleading diagnosis of colon carcinoma, opened to different possibilities of differential diagnosis among the advanced stages of neoplasms with peritoneal dissemination. We highlighted a very weak sporadic nuclear positive for thyroid transcription factor-1 (TTF-1) expression in malignant mesothelioma.

Conclusion: The aim of the present study is to demonstrate the important role of TTF-1 in the diagnosis of mesothelioma. A positive tissue expression of TTF-1 may not exclude a malignant mesothelioma and could help the clinicians to improve its diagnosis and treatment.

Keywords: Malignant Pleural Mesothelioma (MPM); TTF-1; Immunohistochemistry; Diagnosis

Abbreviations: MPM: Malignant Pleural Mesothelioma; IHC: Immunohistochemistry; TTF-1: Thyroid Transcription Factor-1

Introduction

Malignant mesothelioma is a rare neoplasm that originates from the serous coating, pleural, pericardial, abdominal and vaginal tunic of the testicle. The greatest incidence is at pleural and abdominal location. Malignant pleural mesothelioma (MPM) is a rare tumor with a challenging diagnosis. For the first time it was described in 1908 [1] with an ascitogenic clinical presentation in a 32-year-old man. The genesis of mesothelioma has been related to exposure to environmental contaminants, primarily with asbestos fibers [2,3]. Since the most frequent site of onset is the visceral pleura, most of the studies have been directed towards pleural mesothelioma, tending to unite it with the peritoneal one, although some differences have been described between them. Symptoms are often vague. For pleural localizations, dyspnea is a sign that induces medical consultation. On the contrary, for the peritoneal localizations the scarce specificity of clinical signs can often delay the diagnosis of several months [4] except in cases where the presentation is dramatic with visceral perforation or obstruction. Its histological diagnosis is gradual and should be based on morphological assessment, supported by clinical and radiological evidence and immunohistochemistry (IHC). There are many immunohistochemical markers known to distinguish between a malignant mesothelioma and a carcinoma. The current recommendation is to use two mesothelioma markers and two carcinoma markers [5-7]. Immunohistochemistry has proved most useful in the last of these situations but none antibodies in use shows absolute specificity or sensitivity for either tumor [8].

Case Report

We present a case of diffuse mesothelioma of the peritoneum in an 81-year-old male subject in whose history there are no risk factors for exposure to asbestos fibers. The patient was hospitalized for suspicion of right colon cancer. A control colonoscopy revealed left colic diverticulosis and a minute adenoma with low-grade dysplasia in the ascending colon. The CT scan of the upper and lower abdomen and of the thorax, showed a thickening of the right colic wall to refer to primitive neoplasia with diffuse peritoneal carcinomatosis. Nothing was detected on the thorax, except for some minute emphysematous bubbles. It is therefore decided to perform a laparoscopy with the removal of epiploon infiltrated by neoplasia.

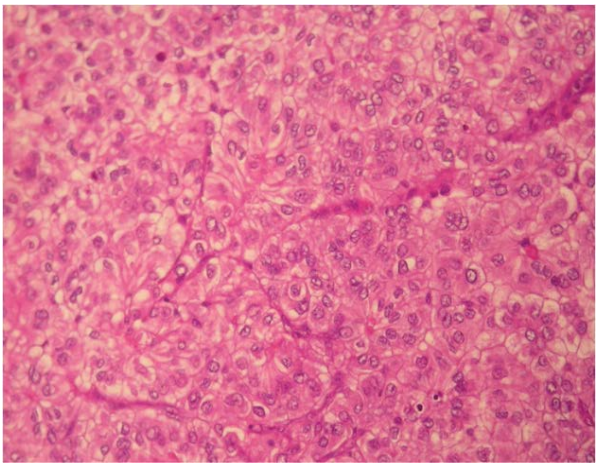

Figure 1: Malignant mesothelioma with epithelioid and elongated cells. Vacuolized, optically empty cores (HE-stain), original magnification 200x.

***Corresponding author:** Cavalcanti E, Histopathology Unit of National Institute of Gastroenterology "S. de Bellis", Research Hospital Castellana Grotte Bari, Italy, Tel: +39-0804994307; E-mail: elisabetta.cavalcanti@irccsdebellis.it

Received January 22, 2019; **Accepted** January 29, 2019; **Published** January 31, 2019

Citation: De Santis S, Armentano R, Cavalcanti E (2019) A Case of Malignant Mesothelioma of the Peritoneum with Sporadic Weak Positivity to TTF-1. J Clin Case Rep 9: 1206. doi: 10.4172/2165-7920.10001206

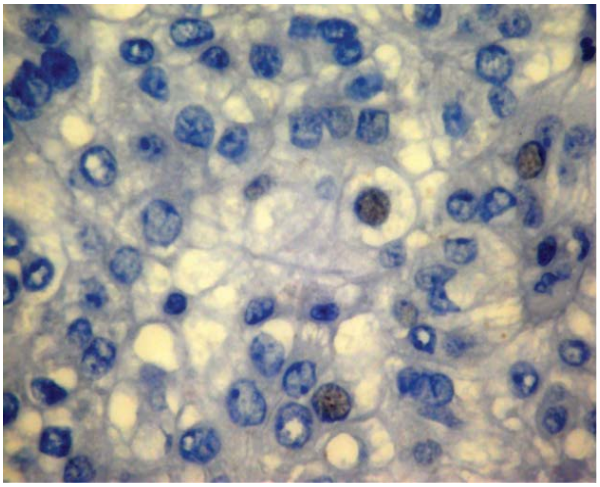

Figure 2: Weak and occasional immunostaining for TTF-1, original magnification 400x.

Macroscopic and microscopic examination

The material taken from the laparoscopy consisted of a large-sized fragment with a diameter of 4 cm and a sustained consistency. The cutting surface showed a coarse separation from thick fibrous shoots. Microscopic observation revealed a neoplasm consisting of monomorphic, polygonal or elongated elements with epithelioid pattern, stratified on both free surfaces of the epiploon fragment, with some infiltrative outbreaks connected by neoplastic beams. Some areas were constituted by papillary, and solid-alveolar aspects, with optically empty nuclei (Figure 1). The immunohistochemical panel, was positive for Calretinin and CA 125. Investigation of Hepatocyte Antigens is negative. The immunohistochemical investigation for TTF-1 revealed a very weak, sporadic nuclear positivity (Figure 2).

Discussion

Due to the lack of specificity of symptoms, the lack of serum tumor markers and the non-specificity of the instrumental diagnostic findings, the conclusive diagnosis of mesothelioma of the peritoneum derives only from the histological evaluation of material taken with needle biopsy or during laparoscopy. Many patients present ascites. In these cases, the cytological examination of the liquid taken in paracentesis may be useful for diagnosis, however the diagnostic accuracy increases with solid tumor samples [9]. In our case, the lack of pathological anamnesis correlated to the clinical presentation, and the misleading diagnosis of colon carcinoma, opened to different possibilities of differential diagnosis among the advanced stages of neoplasms with peritoneal dissemination. In accordance with the classification guidelines, the malignant mesothelioma of the peritoneum is subdivided into three histological subtypes: epithelioid, sarcomatoid and biphasic [10]. In our case the presentation as an epithelioid subtype to routinely investigations as, in addition, highlighted areas consisting of elements in tubulo-papillary and solid-trabecular aggregation. The pronounced cytoplasmic eosinophilia and the presence of optically empty nuclei have included the liver and thyroid in the list of possible histogenesis. The diagnostic process of MPM is tricky and can be one of the greatest challenges faced by the practicing surgical pathologist. The immunohistochemical approach should support the application of a panel including positive and negative markers as suggested by morphology and clinical information when available. Only one study described a case of positive TTF-1 expression in peritoneal mesothelioma [11]. The expression of TTF-1 is presents in about 85% of lung adenocarcinoma and in thyroid carcinoma cases, rarely in colorectal cancers (10%), but only Richter et al. described a positive expression of TTF-1 in malignant mesothelioma. In our case we highlighted a very weak sporadic nuclear positive TTF-1 expression in malignant mesothelioma.

Conclusion

Therefore, our findings are important to define the role of TTF-1 in the diagnosis of mesothelioma: a positive tissue expression of TTF-1 may not exclude a malignant mesothelioma. Hence, the inclusion of TTF-1 in the panel for the diagnosis of malignant mesothelioma can improve the early detection of this cancer in people at high risk. This could significantly improve the course of the disease and the clinical approach to an individualized therapy.

Declarations

Funding

The authors received no funding for this work.

Authors contributions

S.DS and E.C.: Assembly of tissue and data, study design and wrote the manuscript; R.A.: conceived of the study, histological evaluation, data interpretation, evaluation, and editing of the manuscript. All authors critically reviewed the manuscript and gave final approval for publication. Ethics approval and consent to participate approval for the study was obtained from the Ethical Committee in National Institute of Gastroenterology "S. de Bellis," Research Hospital and written informed consent was obtained from all study participants.

Availability of data and materials

The data and materials analyzed during the current study are available from the corresponding author on reasonable request.

Consent for publication

Written consent for publication was obtained from the patient.

Competing interests

The authors declare no conflict of interest related to this study.

References

1. Miller J, Wynn WH (1908) Malignant tumor arising from endothelium of peritoneum and producing mucoid ascitic fluid. J Pathol Bacteriol 12: 267-278.
2. Bridda A, Padoan I, Mencarelli R, Frego M (2007) Peritoneal mesothelioma: A review. Med Gen 9: 32.
3. Teta MJ, Mink PJ, Lau E, Sceurman BK, Foster ED (2008) US mesothelioma patterns 1973-2002: Indicators of change and insights into background rates. Eur J Cancer Prev 17: 525-534.
4. Kaya H, Sezgi C, Tanrikulu AC, Taylan M, Abakay O, et al. (2014) Prognostic factors influencing survival in 35 patients with malignant peritoneal mesothelioma. Neoplasma 61: 433-438.
5. Robinson BWS, Richard A (2005) Lake advances in malignant mesothelioma. N Engl J Med 353: 1591-603.
6. Husain AN, Colby T, Ordonez N, Krausz T, Attanoos R, et al. (2013) Guidelines for pathologic diagnosis of malignant mesothelioma: 2012 update of the consensus statement from the International Mesothelioma Interest Group. Arch Pathol Lab Med 137: 647-667.
7. Lee M, Alexander HR, Burke A (2013) Diffuse mesothelioma of the peritoneum: A pathological study of 64 tumours treated with cytoreductive therapy. Pathol 45: 464-473.
8. King JE, Hasleton PS (2001) Immunohistochemistry and the diagnosis of malignant mesothelioma. Histopathol 38: 471-476.

9. Attanoos RL, Webb R, Dojcinov SD, Gibbs AR (2001) Malignant epithelioid mesothelioma: Anti-mesothelial marker expression correlates with histological pattern. Histopathol 39: 584-588.

10. Battifora H, McCaughey WTE (1994) Tumors of the serosal membranes. Washington DC: Armed Forces Instit Pathol p: 9.

11. Richter G, Heidersdorf H, Hirschfeld D, Krebbel F (2016) Positive TTF-1 expression in malignant mesothelioma: A case report. Am J Case Rep 17: 133-136.