CASE REPORT

DOI: 10.5336/caserep.2020-76324

Malignant Peritoneal Mesothelioma Mimicking Ovarian Cancer in a Young Patient

Emin GEMCİOĞLU[a], Semra FIRAT[b], Serap AKBAY[c]

[a]Clinic of Internal Medicine, Ankara City Hospital, Ankara, TURKEY
[b]Department of Internal Medicine, Ankara Yıldırım Beyazıt University Faculty of Medicine, Ankara City Hospital, Ankara, TURKEY
[c]Clinic of Pathology, Ankara City Hospital, Ankara, TURKEY

ABSTRACT In this case study, a 26-year-old patient who was operated with a preliminary diagnosis of ovarian cancer due to abdominal symptoms and CA-125 elevation and whose pathology report was reported as high-grade serous ovarian cancer was re-evaluated because of lack of benefit from treatment and clinical suspicion. The diagnosis of malignant mesothelioma was made by a pathology report. Our 26-year-old patient with no asbestos exposure showed similar features concerning ovarian cancer and clinical presentation. We report a case of malignant mesothelioma with no pleural involvement due to differences in treatment and outcome of ovarian cancer.

Keywords: Malignant mesothelioma; ovarian neoplasms; asbestos

Malignant mesothelioma is a highly deadly malignancy that may spread to serous membranes, such as pleura, peritoneum, pericardium and testicular tunica vaginalis. The most frequent involvement after pleura is the peritoneum. In the USA, approximately 10-15% of the malignant mesothelioma cases are malignant peritoneal mesothelioma and approximately 600 new cases are encountered per year.[1] Asbestos exposure is in the etiology of 50% of malignant peritoneal mesothelioma cases.[2] There are no specific signs or symptoms of malignant peritoneal mesothelioma, but the most frequent ones found in 35 MPM patients treated in a single center are as follows: abdominal distance/pain, weight loss, dyspnea and chest pain. The time between the beginning of the symptoms and the diagnosis is determined as approximately five months, which often causes difficulty in the differential diagnosis between ovarian cancer because of the likeliness of clinical findings of these two malignancies.[3]

In this study, we present a 26-year-old case with no asbestos exposure, operated with a pre-diagnosis of ovarian cancer, and diagnosed as MPM with final pathology report. This case was presented to help a differential diagnosis and to update information related to malignant pleural mesothelioma basis.

CASE REPORT

A 26-year-old female patient, who did not have a known systemic disease, applied to hospital with a complaint of abdominal pain in April 2019. Our patient, who did not smoke or drink alcohol, was born in Uşak and was living in the Uşak. There was a history of G2 P3 L1, twin preterm exitus delivery, and she was not working. In her family history, one of her aunts died due to breast cancer, and another aunt and grandfather had a history of exitus due to leukemia. The patient's general condition was moderate and her physical examination was unremarkable except for widespread tenderness in the abdomen. Laboratory

Correspondence: Emin GEMCİOĞLU
Clinic of Internal Medicine, Ankara City Hospital, Ankara, TURKEY
E-mail: egemcioglu@gmail.com

Peer review under responsibility of Turkiye Klinikleri Journal of Case Reports.

Received: 14 May 2020 ***Received in revised form:*** 16 Jul 2020 ***Accepted:*** 19 Jul 2020 ***Available online:*** 26 Nov 2020

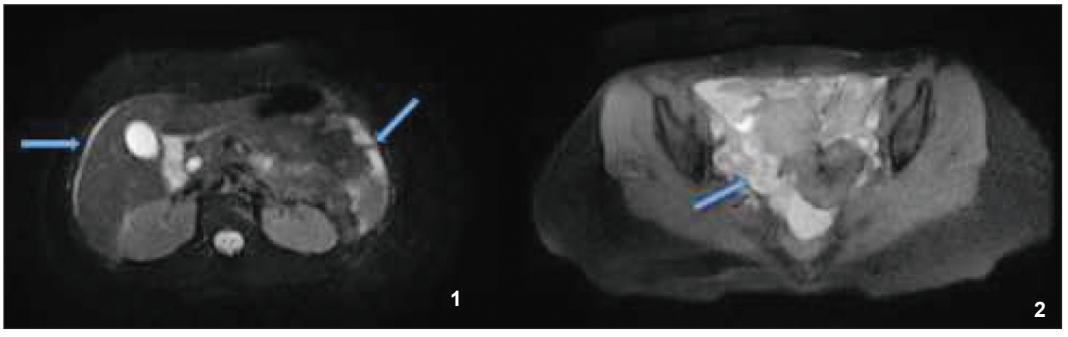

FIGURE 1: Abdominal MRI: Common peritoneal involvement of the liver.

FIGURE 2: Pelvic MRI: Common peritoneal involvement around the small bowel loops in the pelvis.

findings were CA-125: 86, and other biochemical parameters were normal. No pathology was detected in posteroanterior chest radiography. Approximately 47*37 mm soft tissue mass lesion was detected at the superior part of the left adnexal field in abdominal USG. Pathology was not determined in abdominal MRI. The patient's complaints continued in May. Upon report of the repeated abdominal MRI of the patient, which was suspicious soft tissue lesion, size of 48*38 mm, near the uterus fundus superior with undefined border, TV-USG was performed. The serum CA-125 test sent from the patient due to on 4 cm complicated mass in the left ovary in trans-vaginal ultrasonography (TV-USG), resulted as 1200. Hysterectomy + over wedge resection was performed in May. Tumoral implant focuses were cleared by removing total omentum on detection of implant focuses on the omentum, uterus front wall, near the bladder and over the surface (Figure 1, Figure 2, Figure 3). The result of the frozen section was metastatic carcinoma. The pathology report was reported as diffuse intra-abdominal metastatic high-grade serous ovarian cancer. In the follow-up of the patient, carboplatin+paclitaxel chemotherapy was given five cycles because the expected decrease in CA-125 level was not achieved. During follow-up, she was admitted to our clinic with complaints of low oral intake and fatigue and was hospitalized. Because of a family history of breast cancer, the patient was screened for breast cancer. There were no pathological findings. Because of the suspicion of ovarian cancer, pathology preparations were re-studied in our hospital. In pathology preparations EMA, pan-CK, gata 3, p53, p16, WT1 (focal), HBME-1 (localized), D2-40 (focal), CK5/6 (focal) positivity was detected (Figure 4). The pathology report was "malignant mesothelioma (epithelioid type), in left ovary recorded material, few millimetric foci of tumor tissues were observed on the surface of the ovarian tissue in the usual appearance and tumor fragments were reported as separate tissues." In the cross-section of right ovary recorded material, the ovarian tissue was 1,5 cm in diameter and nodular tumor infiltration of 5 mm in diameter was reported (Figure 5).

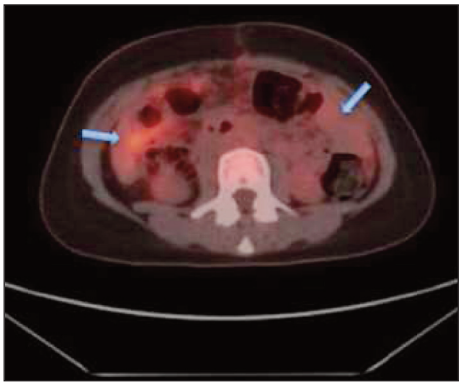

FIGURE 3: PET/CT: Common peritoneal involvement.

Our patient was diagnosed as malignant mesothelioma and evaluated in the tumor council. The patient was transferred to the Department of Gastroenterology Surgery after the decision of hipec and cytoreductive surgery in the tumor council. Informed consent and permission were obtained from the patient.

DISCUSSION

Malignant mesothelioma is a rare malignant tumor seen in pleura, peritoneum, pericardium or serosal

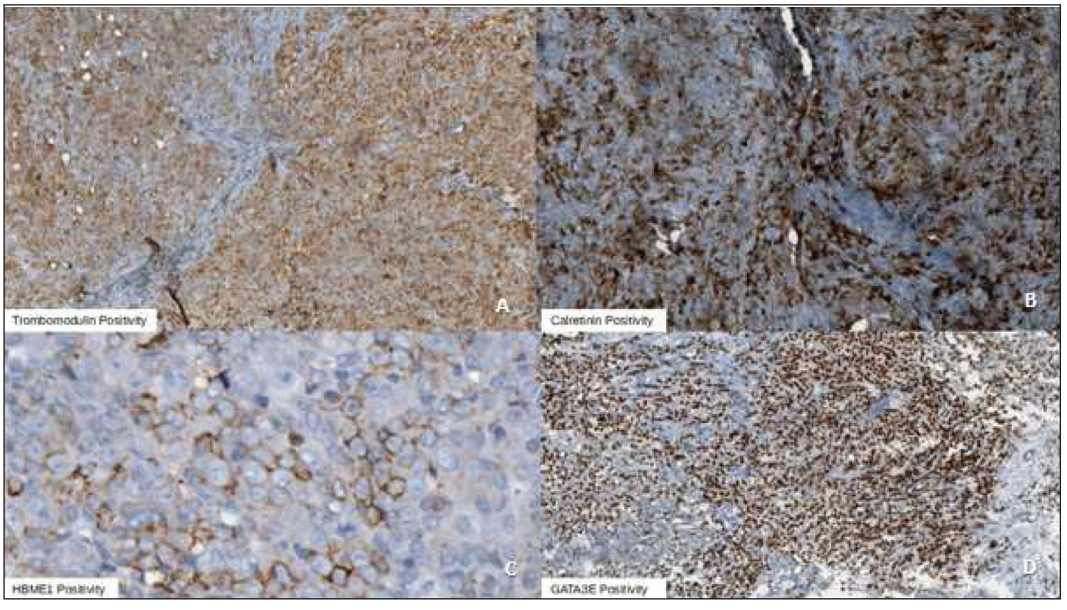

FIGURE 4: A.trombomodulin positivity B.calretinin positivity C.HBME1 positivity D.GATA3E positivity.

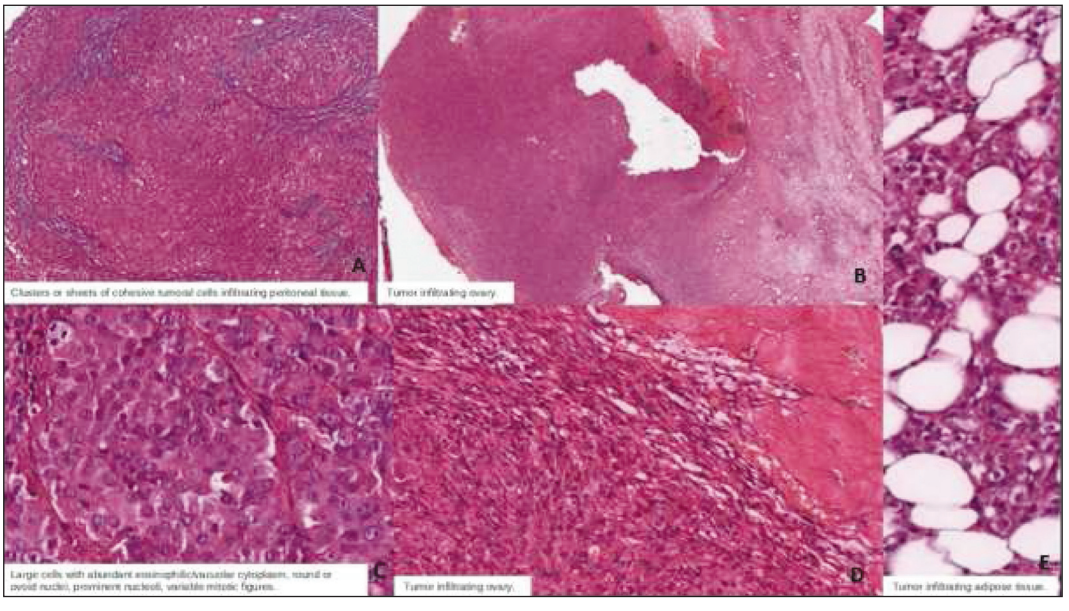

FIGURE 5: A.clusters or sheets of cohesive tumoral cells infiltrating peritoneal tissue B.tumor ınfıltratıng ovary C.large cells with abundant eosinophilic vacuolar cytoplasm round or ovoid nuclei, prominent nucleoli variable mitotic figures D. tumor infiltrating ovary E.tumor infiltrating adipose tissue.

membrane of the tunica vaginalis with poor diagnosis. After the pleural involvement, the most commonplace of involvement is peritoneum.[1] Pleural mesothelioma is common in male patients; half of all malignant peritoneal mesothelioma cases are female patients.[1] Although the mean age of application is between 51-59, there are cases of childhood that reported.[4] The most important risk factor is asbestos and asbestos exposure was reported in half of all patients.[2]

The risk of development of malignant mesothelioma is 10% higher in asbestos exposure. It is considered that the time between exposure and development of malignant mesothelioma is approximately 20 to 40 years.[5,6] In addition to asbestos exposure, radiation, erionite, silicate fiber of

the zeolite family exposure, use of thorotrast, parvovirus, simian virus, BRCA-1 mutation, CDKN2A deletion and NF2 loss are the other risk factors.[5-7]

The age of our patient is 26. It is noticeable that our case was diagnosed with malignant mesothelioma without environmental or vocational asbestos exposure.

There is no special clinical evidence or symptom for malignant peritoneal mesothelioma (MPM). The most common symptoms include stomachache, swelling in the abdomen, weight loss, dyspnea and chest pain. The time between symptoms and diagnosis is approximately five years.[3] In a trial that was performed by Kebapçı et al., there was abdominal swelling in nine of 11 patients that suffered from malignant peritoneal mesothelioma, and it was determined as the most common symptom. Ascites was found in all 11 patients.[8] In this trial, mean serum CA-125 value (normal range: 1.2-32 U/ml) was determined as 230 U/ml (distribution: 19-1000 U/ml) and higher than normal range. Omentum was involved in almost all of the patients. In our case, due to stomachache and higher CA-125 values, ovarian cancer has been focused on, omentum involvement was determined in operations. The diagnosis of mesothelioma was not clear until the pathology report was re-reported.

Radiological tests that are used to diagnose the disease are postero-anterior chest radiography, computed tomography and magnetic resonance imaging. PET-CT was performed for staging.[9] Calcified pleural plaques may be seen in asbestos exposured patients. Omental thickening, omental cakes, intra-abdominal organ involvement and diaphragm involvement are in the other radiological findings.[10] In our case, thorax CT was normal. Pleural involvement was not determined. Ascites was not found in abdomen MRI, but due to a mass that found next to the uterus, ovarian cancer was considered.

In patients that peritoneal mesothelioma was considered due to clinical and radiological assessment, the histopathological examination should be performed.[11] An immunohistochemical examination can assist in the determination of mesothelial cells, but it is not specifically for malignant mesothelioma. The immunohistochemical examination can assist in the differential diagnosis of malignant mesothelioma and more common tumors like metastatic adenocarcinoma, peritoneal serous carcinoma and soft tissue sarcoma.

In most mesothelioma cases, pathological tissue is painted as positive with calretinin, cytokeratin 5/6, WT-1, EGFR, CA-125, thrombomodulin and mesothelin. It is painted as negative with other indicators of adenocarcinoma like CEA; LEUM-1, BER-EP4, B72.3, BG8, PAX-8E, MOX-31. In a trial that was performed by Lee et al., in histopathological examination from 64 tumors, tissues were painted as CA-125 94%, EGFR 94%, calretinin 93%, P16 85%, D2-40 70%, cytokeratin 76%, WT-1 47% positive.[12]

In our case, positivity was determined using calretinin, thrombomodulin, EME, PAN-CK, GATA-3, P53, P16, WT-1 (focal), D2-40 (focal), cytokeratin 5/6 (focal), HBME-1 (rarely). Positivity was not determined with other markers that were used for differential diagnosis. Besides, due to several millimetric tumor tissues that were observed in left ovarian tissue material surface, tumor fragments that were observed as separated tissues, nodular infiltration that had 5 mm diameter in right ovarian tissue material surface and tumor tissue without any invasion to ovarian tissue, it was diagnosed with malignant mesothelioma.

MPM is diagnosed rarely, and most of the information is taken from the single-center series. Thus, there is not a consensus about the treatment of the disease. Previously, diffuse MPM was treated using chemotherapy, radiotherapy and palliative surgery. Median survival is less than one year.[13] Median survival in cases without treatment is six months approximately. Especially significant improvements have been reported in survival with the use of CRS and intraperitoneal chemotherapy in the last 10 years.[14] In a trial performed by Sebbag et al., in 33 patients that were treated with cytoreduction and perioperative intraperitoneal chemotherapy, median survival was determined as 31 months. In a trial that was performed by Park et al., median survival was determined as 26 months in 18 patients.[13,14] In our case, CRS and HIPEC decision was made in the surgery of gastroenterology council.

In conclusion, MPM is a disease that has challenging management because of rare diagnoses, higher morbidity and mortality rates, difficult diagnoses. In clinical suspicion, even if there is no asbestos exposure or younger patient, the diagnosis of malignant mesothelioma should not be ignored. A detailed immunohistochemical examination should be performed for confirmation of diagnosis.

Source of Finance

During this study, no financial or spiritual support was received neither from any pharmaceutical company that has a direct connection with the research subject, nor from a company that provides or produces medical instruments and materials which may negatively affect the evaluation process of this study.

Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

All authors contributed equally while this study preparing.

REFERENCES

1. Kim J, Bhagwandin S, Labow DM. Malignant peritoneal mesothelioma: a review. Ann Transl Med. 2017;5(11):236. [Crossref] [PubMed] [PMC]
2. Niggli FK, Gray TJ, Raafat F, Stevens MC. Spectrum of peritoneal mesothelioma in childhood: clinical and histopathologic features, including DNA cytometry. Pediatr Hematol Oncol. 1994;11(4):399-408. [Crossref] [PubMed]
3. Cioffredi LA, Jänne PA, Jackman DM. Treatment of peritoneal mesothelioma in pediatric patients. Pediatr Blood Cancer 2009;52(1): 127-9. [Crossref] [PubMed]
4. Abós-Herràndiz R, Rodriguez-Blanco T, Garcia-Allas I, Rosell-Murphy IM, Albertí-Casas C, Tarrés J, et al. Risk factors of mortality from all asbestos-related diseases: a competing risk analysis. Can Respir J. 2017;2017:9015914. [Crossref] [PubMed] [PMC]
5. Antman KH, Corson JM, Li FP, Greenberger J, Sytkowski A, Henson DE, et al. Malignant mesothelioma following radiation exposure. J Clin Oncol. 1983;1(11):695-700. [Crossref] [PubMed]
6. Baris I, Simonato L, Artvinli M, Pooley F, Saracci R, Skidmore J, et al. Epidemiological and environmental evidence of the health effects of exposure to erionite fibres: a four-year study in the Cappadocian region of Turkey. Int J Cancer. 1987;39(1):10-7. [PubMed]
7. Singhi AD, Krasinskas AM, Choudry HA, Bartlett DL, Pingpank JF, Zeh HJ, et al. The prognostic significance of BAP1, NF2, and CDKN2A in malignant peritoneal mesothelioma. Mod Pathol. 2016;29(1):14-24. [Crossref] [PubMed]
8. Ros PR, Yuschok TJ, Buck JL, Shekitka KM, Kaude JV. Peritoneal mesothelioma. Radiologic appearances correlated with histology. Acta Radiol. 1991;32(5):355-8. [Crossref] [PubMed]
9. Levy AD, Arnáiz J, Shaw JC, Sobin LH. From the archives of the AFIP: primary peritoneal tumors: imaging features with pathologic correlation. Radiographics. 2008;28(2):583-607. [Crossref] [PubMed]
10. Antman KH, Pomfret EA, Aisner J, MacIntyre J, Osteen RT, Greenberger JS. Peritoneal mesothelioma: natural history and response to chemotherapy. J Clin Oncol. 1983;1(6):386-91. [Crossref] [PubMed]
11. Yates DH, Corrin B, Stidolph PN, Browne K. Malignant mesothelioma in south east England: clinicopathological experience of 272 cases. Thorax. 1997;52(6):507-12. [Crossref] [PubMed] [PMC]
12. Eltabbakh GH, Piver MS, Hempling RE, Recio FO, Intengen ME. Clinical picture, response to therapy, and survival of women with diffuse malignant peritoneal mesothelioma. J Surg Oncol. 1999;70(1):6-12. [Crossref] [PubMed]
13. Sebbag G, Yan H, Shmookler BM, Chang D, Sugarbaker PH. Results of treatment of 33 patients with peritoneal mesothelioma. Br J Surg. 2000;87(11):1587-93. [Crossref] [PubMed]
14. Park BJ, Alexander HR, Libutti SK, Wu P, Royalty D, Kranda KC, et al. Treatment of primary peritoneal mesothelioma by continuous hyperthermic peritoneal perfusion (CHPP). Ann Surg Oncol. 1999;6(6):582-90. [Crossref] [PubMed]