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# Malignant pleural mesothelioma with rarely seen metastases

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ABSTRACT

Malignant mesothelioma, primarily located in the pleura, is a locally aggressive tumor. Distant metastases are rarely seen and mostly diagnosed postmortem. We present the third malignant pleural mesothelioma (MPM) case in the literature with bone marrow metastasis. A 36-year-old male patient presented with pain at the right mediastinal area and 5 × 6cm mass on the right side of his chest. 18-FDG positron emission tomography (PET) scan showed local uptake at the pleura, regional lymph nodes and 5th rib. The tru-cut biopsy reported as sarcomatoid type MPM. Cisplatin-pemetrexed therapy was planned. His medical condition deteriorated after 2 months and multiple metastases to brain, liver, adrenal glands and bone marrow were detected. The patient was lost 4 months after he was diagnosed. Brain and bone marrow metastasis of MPM are rarely seen. Physicians should be careful about the rapid progression and unexpected metastases of MPM.



## 1. Introduction

Malignant pleural mesothelioma (MPM), mostly associated with asbestos, is a malignancy arising from mesothelial or subserosal cells of the pleura, peritoneum and pericardium. The symptoms are usually late-onset and nonspecific. The median survival period is 9–12 months.[1] MPM is highly resistant to chemotherapy and a limited number of patients are suitable for surgery. At the time of the diagnosis, 10–50% of the patients have disseminated disease.[2] The major sites for metastases are lung, regional lymph nodes, liver (especially in sarcomatoid pattern), adrenal glands and kidney.[3] The rarely seen extrathoracic sites for tumor dissemination are spleen, thyroid and brain.[4] Herein, we presented a case of MPM with distant metastases to brain, liver, adrenal glands and bone marrow. To our knowledge, this is the third MPM case in the literature with bone marrow metastases.

## 2. Case report

A 36-year-old male patient referred to our oncology clinic in October 2016, after being diagnosed with MPM. The computed tomography (CT) of thorax revealed right-sided thickness of pleura and 44mm tumor on the right lung. He underwent a tru-cut pleural biopsy and the histological examination showed the features of sarcomatoid type mesothelioma. On physical examination, patient's Eastern Cooperative Oncology Group Performance Status (ECOG PS) was 1 and a 5 × 6cm mass was present on the right side of his chest. Patient had stage IV ($T_4N_2M_0$) mesothelioma and accepted unresectable, so chemotherapy –6 cycles of cisplatin (75mg/m$^2$, every 3 weeks) and pemetrexed (500mg/m$^2$, every 3 weeks)- was planned. After his second chemotherapy session, December 2016, the patient referred to our clinic with lumber pain. The MRI showed poor contrast enhancement in the inferior end plates of L4 and L5 vertebral body. The laboratory results were as followed; white blood cell: 24.6 × 10$^3$/L, neutrophil:19.25 × 10$^3$/L, hemoglobin:9.8g/dL, platelet:36 × 10$^3$/L. Bone marrow aspiration was performed. 15 days later, January 2016, he referred to our emergency service with abdominal pain. The abdominal ultrasonography revealed hypoechoic nodular liver lesions (2.5cm in diameter) and 5 × 3cm nodules on left surrenal gland, both were interpreted as metastatic lesions. Because patient's ECOG PS decreased to 3, his pain increased and respiratory failure developed, he was again admitted to the hospital. Liver biopsy was performed. Three days after his admission, he complained about ptosis, diplopia and limitations in view. An ophthalmologic

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examination and cranial MRI was performed. It showed metastatic mass at the superior orbital fissure invading clivus, which clarified ophthalmologic complaints, and dural metastasis at cervical spine. Intrathecal dexamethasone and methotrexate injection was done for dural metastasis. Bone marrow and liver biopsy results were compatible with mesothelioma. We planned 2nd line chemotherapy; gemcitabine, 1000mg/m$^2$. Patient received the first course of treatment but his respiratory failure worsened. He died following the deterioration of his medical condition in February 2016.

## 3. Discussion

MPM is a rare tumor with poor prognosis. Most of the cases are pleura originated and locally aggressive, metastazing to an organ in close proximity along the serosa membrane.[4] Regional lymph nodes are the major metastatic sites seen in 40% of the cases.[5] The prognosis depends on the patient's age, gender, tumor stage and histological type of the mesothelioma.[6] Although young age has better survival rates, in a study done by Yamagishi et al. on brain metastases in malignant pleural mesothelioma, multivariate analysis showed that <65 years of age is independently associated with brain metastasis, also seen in our 36-year-old patient.[7]

Another important factor associated with poor prognosis in MPM is histological subtype of the disease. Epitheloid subtype is shown to have a better overall survival.[8] Although Yamagishi et al. found no histological difference among brain metastatic patients, Miller et al. showed that the sarcomatoid subtype predominates among these patients.[7,9] Our patient also had sarcomatoid type MPM which might explain the rapid dissemination of the tumor to multiple distant sites -liver, adrenal glands, brain and bone marrow-within 4 months.

The frequency of the distant metastasis seen in MPM, often at the late stage of the disease, are summed up in a study done on postmortem findings of malignant pleural mesothelioma by Finn et al. as liver, peritoneum, bone, spleen, adrenal glands, kidney, thyroid, brain vs 31.9%, 24.4%, 13.8%, 10.8%, 10.2%, 8.7%, 6.9%, 3%, respectively.[10] Metastases to other organs are limited with case reports in the literature. Arslan et al. reported a case of malignant mesothelioma metastasis to the retromolar origin while Framarino-dei-Malatesta et al. reported an unusual case of metastatic MPM to the breast.[11,12] Skeletal muscle metastasis and subcutaneous nodules are also described in few MPM cases.[13,14]

Knipscheer et al. reported two MPM cases with bone marrow metastasis diagnosed with bone marrow biopsy done after an FDG uptake seen in PET scan.[15] Herein, we reported the third MPM case with bone marrow metastasis known in the literature. Since PET scan was just done a month ago and showed no distant metastases, the diagnosis of bone marrow metastasis could easily be overlooked. Leukocytosis was also another remarkable entity. Since pancytopenia was expected during chemotherapy, leukocytosis development deserved the differential diagnosis. Consequently, physicians should always be on the alert for the rapid progression and unexpected metastases of MPM.

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## Conflict of interest

The authors declare that they have no conflict of interests.

## References

1. Pasello G, Ceresoli GL, Favaretto A. An overview of neoadjuvant chemotherapy in the multimodality treatment of malignant pleural mesothelioma. *Cancer Treat Rev*. 2013;39(1):10–17.
2. Brenner J, Sordillo PP, Magill GB, Golbey RB. Malignant mesothelioma of the pleura: review of 123 patients. *Cancer*. 1982;49(11):2431–2435.
3. Sibio S, Sammartino P, Accarpio F, et al. Metastasis of pleural mesothelioma presenting as bleeding colonic polyp. *Ann Thorac Surg*. 2011;92:1898–1901.
4. Finn RS, Brims FJH, Gandhi A, et al. Postmortem findings of malignant pleural mesothelioma: a two-center study of 318 patients. *Chest*. 2012;142(5):1267–1273.
5. Yamamuro M, Gerbaudo VH, Gill RR, Jacobson FL, Sugarbaker DJ, Hatabu H. Morphologic and functional imaging of malignant pleural mesothelioma. *Eur J Radiol*. 2007;64(3):356–366.
6. Spirtas R, Connelly RR, Tucker MA. Survival patterns for malignant mesothelioma: the SEER experience. *Int JCancer*. 1988;41:525–530.
7. Yamagishi T, Fujimoto N, Miyamoto Y, et al. Brain metastases in malignant pleural mesothelioma. *Clin Exp Metastasis*. 2016;33(3):231–237.
8. Geltner C, Errhalt P, Baumgartner B, et al. Austrian MesotheliomaInterest Group (AMIG). Management of malignant pleural mesothelioma - part 1: epidemiology, diagnosis, and staging : consensus of the austrian mesothelioma interest Group (AMIG). *Wien Klin Wochenschr*. 2016;128(17-18):611–617.
9. Miller AC, Miettinen M, Schrump DS, Hassan R. Malignant mesothelioma and central nervous system metastases. Report of two cases, pooled analysis, and systematic review. *Ann Am Thorac Soc*. 2014;11:1075–1081.
10. Finn RS, Brimsa FJ, Gandhi A, et al. Postmortem findings of malignant pleural mesothelioma: a two-center study of 318 patients. *Chest*. 2012 Nov;142(5):1267–1273.
11. Arslan A, Ozcakir-Tomruk C, Deniz E, Akin O. A case report of metastasis of malignant mesothelioma to the retromolar trigone. *World J Surg Oncol*. 2016;14(1):188.
12. Framarino-dei-Malatesta M, Sammartino P, Derme M, Iannini I, Masselli G, Pecorella I. Breast cancer or metastasis? An unusual case of metastatic malignant pleural mesothelioma to the breast. *World J Surg Oncol*. 2015;13:79.
13. Pappa L, Melpomeni M, Tsanou E, et al. Subcutaneous metastasis of peritoneal mesothelioma diagnosed by fine-needle aspiration. *Pathol Oncol Res*. 2006;12(4):247–250.
14. Falkenstern-Ge RF, Kimmich M, Bode-Erdmann S, Friedel G, Ott G, Kohlh€aufl M. Pleural mesothelioma presenting as periumbilical metastasis: the first clinical documentation. *Case Rep Oncol Med*. 2013;2013:198729.
15. Knipscheer BJ, Kromontono RC, de Bruin PC, van Strijen MJ, Herder GJ. Two malignancies or an unusual presentation of a pleural malignancy? *Lung Cancer*. 2013;81(2):306–307.