Malignant peritoneal mesothelioma – a rare cause of laparotomy

Tomasz Okniński[1], Monika Romanowska[1], Jacek Pawlak[1], Agnieszka Nawrocka-Kunecka[2]

[1]The Surgical Ward, The Western Hospital John Paul II, Grodzisk Mazowiecki, Poland
[2]Health Care Institution Diagnostics Consilio, Lodz, Poland

Gastroenterology Rev 2017; 12 (2): 152–155
DOI: https://doi.org/10.5114/pg.2017.68044

Address for correspondence: Monika Romanowska MD, Surgical Ward, Western Hospital, 11 Daleka St, 05-825 Grodzisk Mazowiecki, Poland, phone: +48 605 762 793, e-mail: monika.meszka@gmail.com

Mesotheliomas are aggressive tumours of the serosal membrane that covers the internal organs of the body. The most frequently affected surfaces are pleura (65–70%), peritoneum (30%), tunica vaginalis testis, and pericardium (1–2%) [1, 2]. Peritoneal mesothelioma was first described in 1908 by Miller and Wynn [3, 4]. The disease incidence depends on geographic region and ranges from about 7 to 40 per 1,000,000 in industrialised countries (i.e. Britain, the Netherlands, Australia). The incidence rate in Poland has still not been evaluated. It is more common in males and the incidence of peritoneal mesothelioma is 0.5–3.0 per million per year in males, and 0.2–2.0 per million per year in females. The main risk factor associated with all forms of mesothelioma is asbestos exposure [5, 6]. Other risk factors are radiation, erionite or mica exposure, talc, as well as patients suffering from familial Mediterranean fever and diffuse lymphocytic lymphoma [7–9]. Literature review shows that only 50% of patients with recognised peritoneal mesothelioma have a history of asbestos exposure [10].

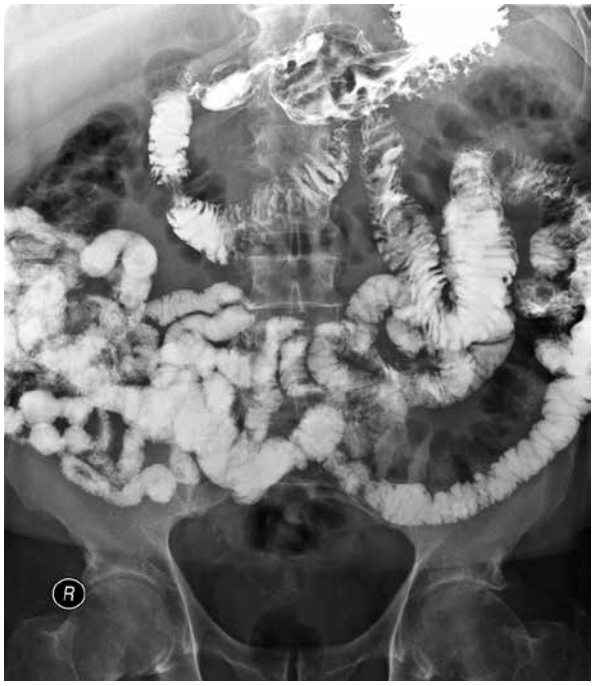

Figure 1. The abdominal X-ray with barite

A 74-year-old man with a background of ischaemic heart disease, diabetes, and hypertension was admitted to the Department of General Surgery in June because of fullness in the upper abdomen and its associated recurring pain, one week emesis after meals, weakness, and weight loss of about 15 kg during the last month. Initial clinical examination and blood examinations revealed malnutrition only. A chest X-ray did not suggest any abnormalities. An ultrasonographic examination showed low rate ascites and extended small bowel especially in the left upper quadrant. On 15 June 2015 a colonoscopy was performed. This showed three hyperplastic polyps of the sigmoid colon without any other pathologic mass, but his general condition did not improve and emesis persisted. Further imaging studies, an abdominal X-ray with barite (Figure 1), and computed tomography (CT) of the abdomen (Figure 2) revealed the presence of a pathologic infiltrating mass that measured about 40 mm and was located in the proximal part of the small bowel in the left lower quadrant. Moreover, omental involvement and subtle signs of ascites were seen. The patient was qualified for surgical treatment after appropriate preparation (total parenteral nutrition was initiated before operation). On 24 June 2015 he underwent a partial resection of the small bowel with a tumour closing almost totally a lumen of the bowel (Figures 3, 4). Furthermore, during surgery multiple very small peritoneal nodules, the same as in all mesentery, were found, an open biopsy of the omentum was done,

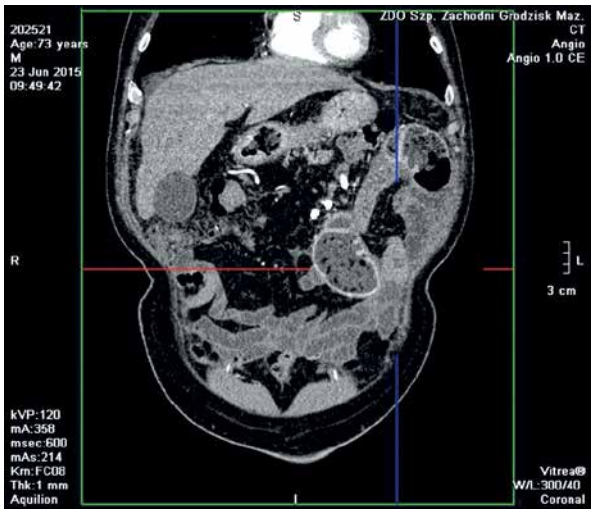

Figure 2. Computed tomography of the abdomen

Figure 4. Tumour of small bowel after resection

and ascitic sticky and gelatinous fluid was also found. Histopathological examination (Figures 5, 6) showed peritoneal mesothelioma in the small bowel as well as in the caul, no metastases in the lymph nodes were found, the surgical margin was free of cancer too. The postoperative course was uncomplicated. On the ninth day after the surgery the patient was released in good condition and referred to the oncological outpatient clinic, where he were qualified to postoperative intraperitoneal chemotherapy.

Peritoneal mesothelioma represents the second most common site of malignant mesothelioma and ac-

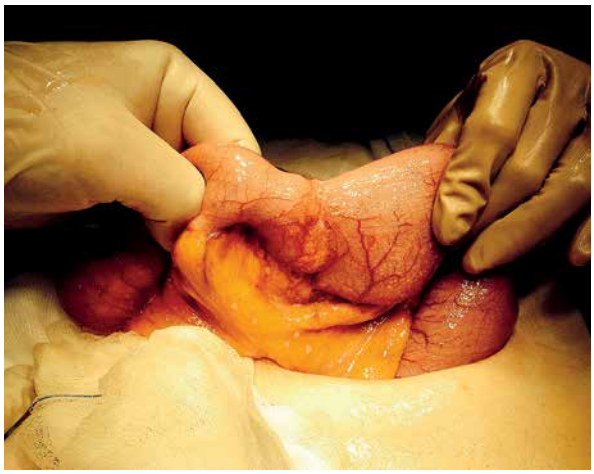

Figure 3. Tumour of small bowel

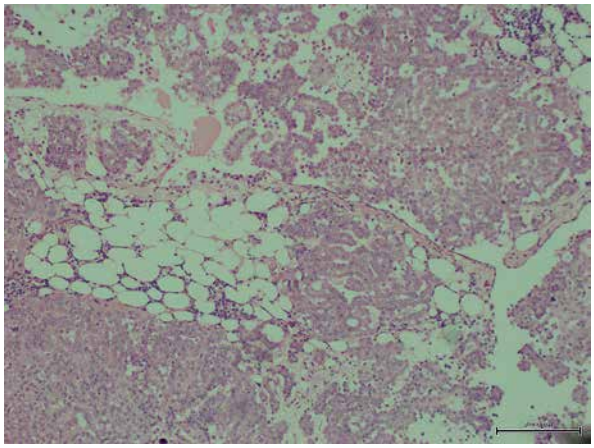

Figure 5. The part of the visceral peritoneum with mesothelioma infiltration (papillous structures "extended" from the surface of peritoneum in the upper part of the photo)

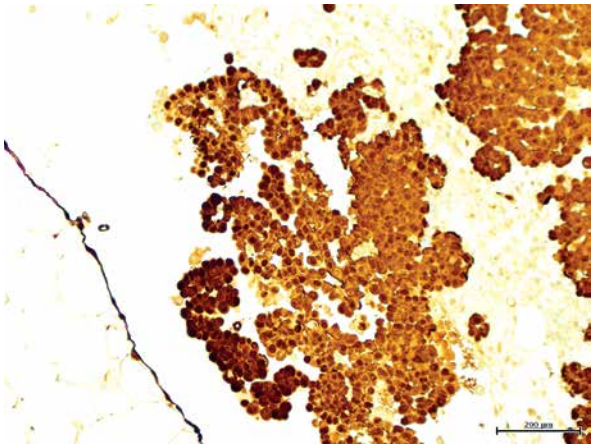

Figure 6. Cells of mesothelioma – positive reaction with calretinin (mesothelial cell marker)

counts for 20% to 30% of reported cases [11, 12]. The association between asbestos exposure and peritoneal mesothelioma is less strong than in the case of pleural mesothelioma. However, our patient did not have a history of asbestos or any other known risk factor exposure. Peritoneal mesothelioma is more common in males and it can occur in any age group, but those in the sixth decade are the most affected [13, 14]. The diagnosis of peritoneal mesothelioma is usually delayed due to atypical and nonspecific clinical symptoms such as weight loss, abdominal discomfort, pain, malaise, emesis, and constipation. Rarely, patients present with night sweats, fever of unknown origin, intestinal obstruction, or acute laparotomy [15–17]. Routine laboratory tests or radiograph are not useful either. Ultrasonography examinations and computer tomography findings are vague and not sufficient to establish the diagnosis. However, CT can be helpful in the detection, localisation, and staging of peritoneal masses. Three types of peritoneal mesothelioma have been described based on CT scan. The most common is "dry" type in which a large mass or multiple small masses and no ascites are seen. In the "wet" type of mesothelioma, CT reveals widespread small nodules and plaques with ascites but without any solid dominant mass. The "mixed" type is associated with both dry and wet types [14, 18, 19]. If ascites are present, paracentesis with fluid cytology may be performed but this procedure has a low diagnostic potential due to the small number of malignant cells within the fluid. Instead, a tumour biopsy should be done to reach a definitive diagnosis [12]. Moreover, diagnostic accuracy increases with the size of the taken sample because the immunohistochemical expression of tumour markers is not homogeneous within the same solid tumour section. For patients with diagnosed peritoneal mesothelioma there are limited therapeutic options. Radical resection is the best option with the best prognosis. However, it is often not possible to achieve complete resection, so cytoreductive surgery involving removal of all visible masses should be done. Surgery alone has proven to be ineffective, it should be combined with intraperitoneal chemotherapy. This multimodality treatment has resulted in a median survival of 50 to 60 months [18, 20–24]. Radiotherapy has a very limited role in the treatment of peritoneal mesothelioma, so it is not currently used [25]. Other therapeutic options are immunotherapy (humanised anti-CD3 antibodies, cytotoxic T lymphocytes, interferon α2a, autovaccine), gene therapy, and photodynamic therapy, which are being used on an experimental basis at present and are dedicated to palliation of advanced peritoneal mesothelioma [26–29]. Malignant mesothelioma of the peritoneum is a difficult diagnostic problem. This case report discussed the diagnostic challenges and treatment of peritoneal mesothelioma. Diagnosis is often delayed due to nonspecific clinical symptoms, a variety of radiological images, and similarity to other cancerous diseases. The mainstay of diagnosis is histopathological and immunohistochemical analysis of samples obtained during operation.

Conflict of interest

The authors declare no conflict of interest.

References

1. Sugarbaker PH, Acherman YI, Gonzalez-Moreno S et al. Diagnosis and treatment of peritoneal mesothelioma. The Washington Cancer Institute experience. Semin Oncol 2002; 29: 51-61.
2. De Pangher Manzini V. Malignant peritoneal mesothelioma. Tumori 2005; 91: 1-5.
3. Bridda A, Padoan I, Mencarelli R, et al. Peritoneal mesothelioma: a review. Med Gen Med 2007; 9: 32.
4. Cunha P, Luz Z, Seves I. Malignant peritoneal mesothelioma – diagnostic and therapeutic difficulties. Acta Med Port 2002; 15: 383-6.
5. Bianchi C, Bianchi T. Malignant mesothelioma: global incidence and relationship with asbestos. Ind Health 2007; 45: 379-87.
6. Boffetta P. Epidemiology of peritoneal mesothelioma: a review. Ann Oncol 2007; 18: 985-90.
7. Antman K, Hassan R, Eisner M, et al. Update on malignant mesothelioma. Oncology 2005; 19: 1301-9.
8. Belange G, Gompel H, Chaouat Y, et al. Maliganat peritoneal mesothelioma occuring in periodic disease: apropos of a case. Rev Med Interne 1998; 19: 427-30.
9. Gentiloni N, Febbraro S, Barone C, et al. Peritoneal mesothelioma in recurrent familial peritonitis. J Clin Gastroenterol 1997; 24: 276-9.
10. Busch JM, Kruskal JB, Wu B; Armed Forces Institute of Pathology. Best cases from the AFIP. Malignant peritoneal mesothelioma. Radiographics 2002; 22: 1511-5.
11. Raza A, Huang WC, Takabe K. Advances in the management of peritoneal mesothelioma. World J Gastroenterol 2004; 20: 11700-12.
12. Kindler HL. Peritoneal mesothelioma: the site of origin matters. In: American Society of Clinical Oncology, Educational Book. Dizon DS (ed.). Alexandria, VA: ASCO 2013; 182-7.
13. Baker PM, Clement PB, Young RH. Malignant peritoneal mesothelioma in women: a study of 75 cases with emphasis on their morphologic spectrum and differential diagnosis. Am J Clin Pathol 2005; 123: 724-37.
14. Ishatiaq A, Salman AT, Sundas I. Malignant mesothelioma. Pak J Med Sci 2013; 29: 1433-8.
15. American Cancer Society. Malignant Mesotehlioma Overview. 2012 Retrieved from website: http://www.cancer.org/acs/groups/cid/documents/webcontent/003062-pdf.pdf.
16. Chua TC, Chong CH, Morris DL. Peritoneal mesothelioma: current status and future directions. Surg Oncol Clin N Am 2012; 21: 635-43.

17. Manzini Vde P, Recchia L, Cafferata M, et al. Malignant peritoneal mesothelioma: a multicenter study on 81 cases. Ann Oncol 2010; 21: 348-53.
18. Sugarbaker PH, Acherman YI, Gonzalez-Moreno S. Diagnosis and treatment of peritoneal mesothelioma: the Washington Cancer Institute experience. Semin Oncol 2002; 29: 51-61.
19. Pickhardt PJ, Bhalla S. Primary neoplasms of peritoneal and sub-peritoneal origin: CT findings. Radiographics 2005; 25: 983-95.
20. Pollock C, Maddula M, McAleer B. Peritoneal mesothelioma – a case report. Respir Med CME 2009; 2: 80-3.
21. Sterman DH. Advances in management of mesothelioma. Respirology 2005; 10: 266-83.
22. Rodrigez D, Cheung MC, Housri N, et al. Malignant abdominal mesothelioma: defining the role of surgery. J Surg Oncol 2009; 99: 51-7.
23. Konstatinidis IT, Young C, Tsikitis VL, et al. Cytoreductive surgery and hypertermic intraperitoneal chemoperfusion: the University of Arizona early experience. World J Gastrointest Surg 2012; 27: 135-40.
24. Sugarbaker PH, Yan TD, Stuart OA, et al. Comprehensive management of diffuse malignant peritoneal mesothelioma. Eur J Surg Oncol 2006; 32: 686-91.
25. Hesdorffer ME, Chabot JA, Keohan ML, et al. Combined resection, intraperitoneal chemotherapy, and whole abdominal radiation for the treatment of malignant peritoneal mesothelioma. Am J Clin Oncol 2008; 31: 49-54.
26. Robinson BW, Musk AW, Lake RA. Malignant mesothelioma. Lancet 2005; 366: 397-408.
27. Schlom J. Therapeutic cancer vaccines: current status and moving forward. J Natl Cancer Inst 2012; 104: 599-613.
28. Abramson Cancer Center of the University of Pensylvania. Gene Therapy: The Basics.2010. Retrieved form website: http://www.cancer.org/Cancer/Malignant Mesothelioma/detailedGuide/malignat-mesothelioma-new-research.
29. Demmy TL. Surgery and Photodynamic Therapy in Treating Patient With Malignant Mesothelioma 2011. Retrieved form website: http://clinicaltrials.gov/ct2/show/NCT00054002.

Received: 7.04.2016
Accepted: 17.08.2016