Signature: © Pol J Radiol, 2010; 75(4): 61-63

Polish Journal of Radiology
www.PolRadiol.com
CASE REPORT

Received: 2010.09.03
Accepted: 2010.10.01

Pleural mesothelioma – case report

Anna Klawiter, Tomasz Damaszke

Department of Radiology and Imaging Diagnostics, F. Ceynowa Specialist Hospital, Wejherowo, Poland

Author's address: Anna Klawiter, Department of Radiology and Imaging Diagnostics, F. Ceynowa Specialist Hospital, Wejherowo, Poland, e-mail: annaklawiter@gazeta.pl

Summary

Background: Pleural mesothelioma is a very rare neoplasm; especially the local form. The diagnostics is difficult and the prognosis unfavourable.

Case Report: We presented a case of a man with dyspnoea and cough. His chest radiogram showed hydrothorax on the left side. Neither the examinations of the pleural liquid, nor the CT-guided fine needle biopsy established the diagnosis. CT showed features suggestive of pleural mesothelioma. The diagnosis was confirmed by thoracoscopy. Although no neoplastic cells were found in the thoracoscopic specimen from the supradiaphragmatic tumor, we assumed that to be a case of a diffuse, primarily local form of mesothelioma.

Conclusions: Diagnostics of pleural mesothelioma is very difficult. CT and thoracoscopy seem to be very valuable diagnostic methods. It is worth remembering that pleural mesothelioma can have a local form which may transform into a diffuse one.

Key words: pleural mesothelioma • pleural tumour • hydrothorax

PDF file: http://www.polradiol.com/fulltxt.php?ICID=881345

Background

Mesothelioma is a rare neoplasm, found in approx. 1 case/million/year. It develops mainly in individuals over 60, men mostly, although it was also reported in children. Its main risk factor is asbestos. The incidence of mesothelioma in people exposed to asbestos is 300 times higher than in the general population. Other risk factors include erionite, radiotherapy and other surgeries causing pleural scarring. The most commonly reported symptoms include dyspnoea resulting from pleural effusion and pain in the chest. Diagnostic imaging involves: standard X-rays, CT, MRI, and PET. The best method for a final diagnosis seems to be videothoracoscopy. Treatment of mesothelioma includes chemotherapy, radiotherapy and surgical resections. The mortality is almost 100%. Recovery has been rarely reported, and only in cases of a very early diagnosis, subjected to adjuvant treatment.

Case Report

A man, 57 years old, admitted to the Department of Lung Diseases and Tuberculosis for a tiring, dry cough and dyspnoea on effort, present for the last 3 weeks. He had a history of tuberculosis in the childhood. He was not exposed to asbestos in his work. An X-ray showed a shadow in the left chest caused by the presence of fluid in the pleural cavity (Figure 1). A decompressing puncture of the left pleural cavity was performed, and a bloody fluid was obtained. Fluid cultures for tuberculosis and microbiological cultures were negative. No neoplastic cells were found in cytological examinations of the fluid. Bronchoscopy was normal. Chest CT was performed. It revealed a significant amount of fluid in the left pleural cavity and a poorly delineated, inhomogeneous mass lesion between the pleural layers in the base of the left lung (Figure 2A). In its largest dimension, the lesion measured 85 mm. The mass showed a slight enhancement after contrast medium administration. Above the tumour, there was a slight thickening of the pleura at 3 spots (Figure 2B). USG of the chest was performed. It showed effusion in the pleural cavity and a poorly vascularised, hyperechogenic mass lesion between the layers of the thickened pleura (Figure 3). Within the tumour, there were hypo- and anechoic areas suggestive of haemorrhage.

CT-guided FNAB was performed twice. There were no neoplastic cells found on cytology. The patient was transferred to the Clinic of Chest Surgery of the Medical University of Gdańsk. This is where he underwent transpleural thoracoscopy that revealed a supradiaphragmatic soft tumour with

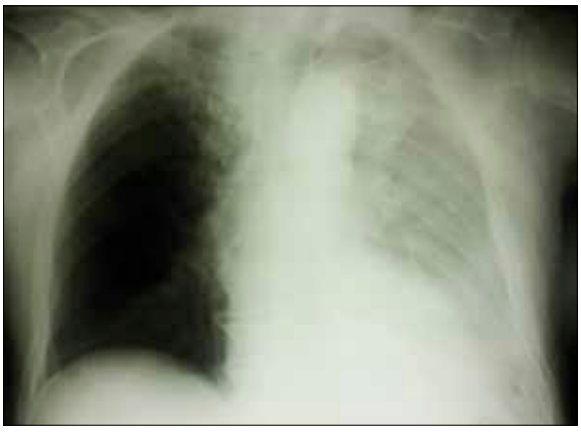

Figure 1. Chest radiogram. Pleural effusion in the left pleural cavity.

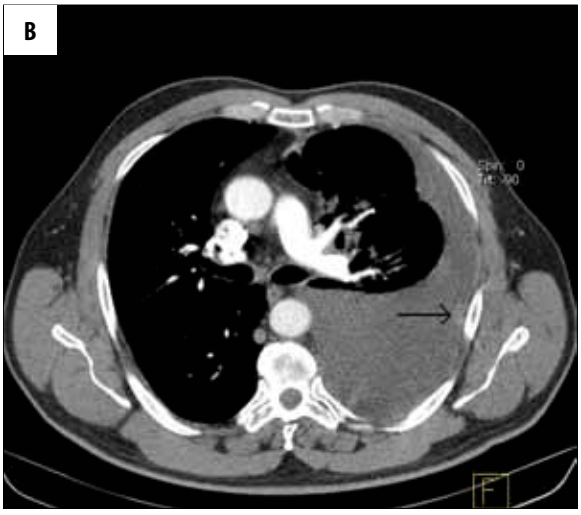

Figure 2. Contrast enhanced CT. (**A**) Heterogenous tumor between thickened pleural laminas. (**B**) Pleural tumor.

a bleeding surface, located in the pleural cavity, and minor mass lesions of the pleura. Biopsies were sampled. With a microscopic image and immunohistochemistry, we could diagnose that minor nodulous pleural thickening as mesothelioma (Figure 4A,B). Sample material from the supradiaphragmatic tumour showed a hyalinised tissue with haemorrhage, containing no neoplastic cells.

Discussion

Computed tomography plays an important role, both in the diagnostics and in the evaluation of treatment response in mesothelioma [1]. The most common symptoms of mesothelioma found on CT are: pleural thickening, including pleura in interlobar fissures, effusion in the pleural cavity, decreased volume of the affected side of the chest, mediastinum shifted to the healthy side, and pleural calcifications [2].

Other symptoms that can be suggestive of the disease include: nodular thickening of the pleura, pleural thickening of over 1 cm, and infiltration of the mediastinal pleura [3].

The CT image obtained from the above presented patient was suggestive of a diffuse mesothelioma right from the beginning. A large mass between the pleural layers could present a primarily localised form of mesothelioma, while the small pleural tumours could be indicative of neoplastic dissemination. Localised mesothelioma is a very rare form of tumour.

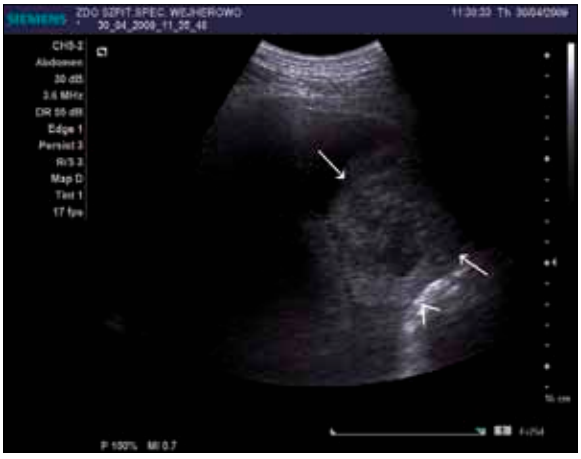

Figure 3. Chest ultrasonography. Hyperechoic tumor beteween thickened pleural laminas. Hypoechoic and anechoic areas of haemorrhage within the tumor (< diaphragm, → tumour).

It manifests itself as a well-delineated tumour, without macro- or microscopic features of diffuse pleural infiltration. Sometimes, it is accompanied by the presence of pleural effusion. Localised mesothelioma is a tumour that can reach even 10 cm in diameter. It is pedunculated or adjoins the visceral or the parietal pleura on a wide base. Microscopically, it is possible to distinguish the same types, as in case of diffuse mesothelioma – epithelioid, sarcomatous, and mixed. In histochemical and immunohistochemical examinations, the localised forms present as the diffuse ones [4]. According to some authors, the localised tumour is the first stage of the disease, followed by the diffuse form [5]. Despite the fact that the material sampled thoracoscopically from the supradiaphragmatic tumour showed only the hyalinised tissue, without neoplastic cells, we may assume that the tumour was primarily localised, and then subjected to hyalinisation.

The reported case illustrates quite common diagnostic difficulties found in mesothelioma. No cytological examinations of the pleural effusion showed the presence of neoplastic cells. They are found in only approx. 50% of patients with pleural effusion produced in the course of mesothelioma [4]. Repeated FNAB did not reveal the diagnosis either, despite its common use in mesothelioma diagnostics. This is because it was the hard, hyalinised, supradiaphragmatic tumour that was punctured, while the diagnosis was made on the basis of the material aspirated from small pleural nodules.

A widely recommended diagnostic tool in case of suspected mesothelioma is the videothoracoscopy. It allows for sampling as much material as necessary to carry out

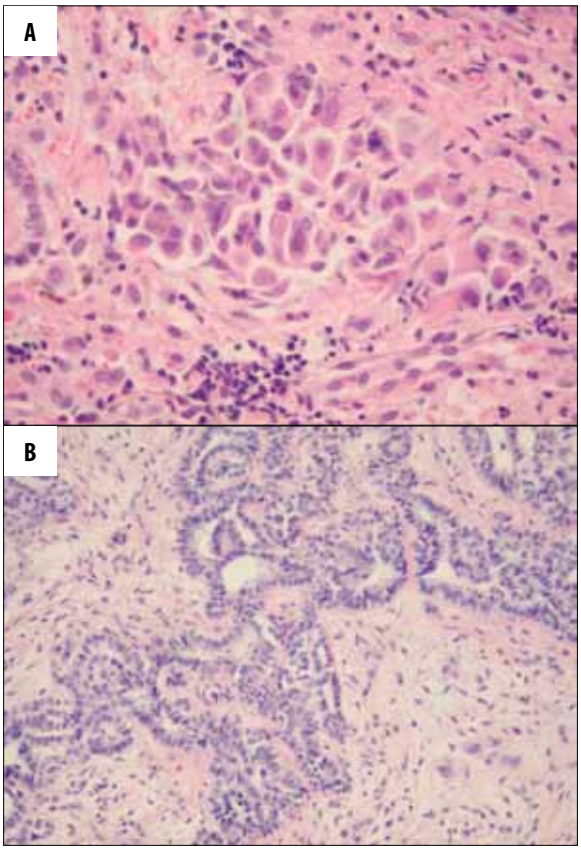

Figure 4. Pleural mesothelioma, epitheliocellular type. (**A**) Loosely combined multilateral cells imitate macrocellular cancer or lymphoma. (**B**) Mesothelioma cells imitate glandular tissue with cell's polarisation and secretion.

immunohistochemical examinations required for the final diagnosis [4]. In the presented case, it was the thoracoscopy that allowed for making the final diagnosis.

Conclusions

Mesothelioma is a tumour causing many diagnostic difficulties. It, and especially its localised form, belongs to rare neoplasms. However, we should be aware of the presence of the localised form, due to the predicted incidence increase by the year 2020–2030 [6].

Acknowledgements

Acknowledgements to: Prof. Kazimierz Jaśkiewicz, MD PhD, and Małgorzata Kurzępa, MD, for their help in preparing the case report.

References:

1. Nq CS, Mundek RF, Libshitz HI: Malignant pleural mesothelioma: the spectrum of manifestations on CT in 70 cases. Clin Radiol, 1999; 54(7): 415–21
2. Kawashima A, Libshitz HI: Malignant pleural mesothelioma: CT manifestations in 50 cases. AJR Am J Roentgenol, 1990; 155(5): 965–69
3. Moore AJ, Parker RJ, Wiggins J: Malignant mesothelioma. Orphanet J Rare Dis, 2008; 3: 34
4. Travis WD: World Health Classification of Tumors. Pathology and Genetics. Tumors of the lung, pleura, thymus and heart. Lyon, 2004; 128–36
5. Hirano H, Takeda S, Sawabata Y et al: Localized pleural malignant mesothelioma. Pathol Int, 2003; 53(9): 616–21
6. Porret E, Madelaine J, Gelateau-Salle F et al: Epidemiology, molecular biology, diagnostic and therapeutic strategy of malignant pleural mesothelioma in 2007 – an update. Rev Mal Respir, 2007; 24(8 Pt 2): 6S157–64