Chirurgia (2019) 114: 506-511
No. 4, July - August

http://dx.doi.org/10.21614/chirurgia.114.4.502

Pulmonary Infarction with Pleural Effusion – Pathologic Surprise in the Oncological Patient

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Rezumat

Infarctul pulmonar cu pleurezie – surpriză anatomo-patologică la pacientul oncologic

Prezentăm o bolnavă de 49 de ani tratată în urmă cu 10 ani pentru un cancer mamar (mastectomie urmată de radio- şi chimioterapie), trimisă în serviciul nostru pentru rezolvarea unei pleurezii recidivante (lichid pleural - proteine totale 4,1 g%, glucoză 100 mg%, LDH 493 U/l, celularitate abundentă cu 30% eozinofile dar fără atipii evidente). Examenul CT evidențiază un revărsat pleural închistat şi o pleură îngroşată şi neregulată, ridicând suspiciunea de malignitate. Intraoperator s-a găsit o pleurezie închistată multicompartimentată pentru care s-a practicat decorticare Fraser-Gourd şi 7 tumori pulmonare subpleurale cu diametre între 0,5 şi 5 cm interpretate ca metastaze pentru care s-au practicat electrorezecții atipice cu reconstrucție pulmonară. Evoluția post-operatorie a fost favorabilă, cu externare la 16 zile postoperator. Examenul histo-patologic evidențiază o pleură infiltrată inflamator fără atipii şi infarct pulmonar din toate cele 7 piese de rezecție pulmonară. Testele de coagulare standard au fost normale dar o analiză detaliată a coagulării nu a fost posibilă iar examenul ecografic cardiac şi venos periferic efectuat postoperator nu a decelat nici o anomalie care să explice infarctul pulmonar. După stabilirea diagnosticului definitiv s-a instituit tratament anti-agregant şi anticoagulant oral dicumarinic, acesta din urmă fiind apoi abandonat datorită complianței reduse a pacientei. La controlul efectuat la 26 de luni postoperator pacienta nu prezenta semne de recidivă, decedând însă la 32 de luni postoperator în

Received: 03.11.2017
Accepted: 09.01.2018

urma unui accident vascular cerebral. Cazul este interesant prin ilustrarea dificultăților de diagnostic a revărsatelor pleurale la pacienții oncologici şi surpriza anatomo-patologică de infarct pulmonar; considerarea acestui caz ca "depăşit" şi abandonarea lui ar fi dus la o chimioterapie inutilă şi evoluție spre o supurație pleuro-pulmonară severă.

Cuvinte cheie: infarct pulmonar, pleurezie recidivantă, cancer

Abstract

We present the case of a 49 years-old female treated 10 years ago for a breast cancer (mastectomy followed by radio- and chemotherapy), referred to our unit for a recurrent pleural effusion with no response to medical treatment (pleural liquid – total proteins 4,1 g%, glucose 100 mg%, LDH 493 U/l, abundant cellularity with 30% eosinophils but no obvious neoplastic cells). The CT examination showed a loculated pleural effusion and a thickened irregular pleura, raising the suspicion of malignancy. Intraoperatively we found a loculated effusion – Fraser Gourd decortication and 7 subpleural pulmonary tumors with a diameter between 0,5 and 5 cm which we considered to be pulmonary metastases and performed non-anatomical resections with pulmonary reconstruction. The postoperative course was favourable, with discharge on post-operative day 16.The pathologic examination showed an inflammatory infiltrated pleura with no atypia and pulmonary infarction in all the 7 pulmonary resection specimens. Standard coagulation tests were normal but a detailed analysis of the coagulation status was not available, while postoperative cardiac and peripheric venous ultrasound did not show any abnormality explaining the pulmonary infarction.After the definitive diagnosis, the patient was treated with antiaggregants and dicumarinic oral anticoagulation, the later being abandoned due to poor compliance. At the 26 months follow-up the patient showed no signs of recurrence but she died at 32 months after surgery due to a stroke. The case is interesting due to the illustration of the diagnostic difficulties encountered in the oncological patients with pleural effusions; considering this case as "inoperable" would have resulted in anuseless chemotherapy and progression towards a more severe pleuro-pulmonary suppuration.

Key words: pulmonary infarction, recurrent pleural effusion, cancer

Introduction

Pleural effusions are a common finding in oncological patients, the main cause being the presence of pleural metastases which indicates a stage IV / M1 disease with a poor prognosis (1,2). However, there are many causes of pleural effusions (3) and a correct diagnosis is mandatory in order to avoid major medical mistakes (1, 4). We report an oncologic patient with a recurrent pleural effusion caused by pulmonary infarction.

Case Report

We present a 49 years-old female treated 10 years ago for a breast cancer (mastectomy followed by radio- and chemotherapy) whose current disease started about 3 months before with chest pain and sporadic episodes of cough and sputum (muco-purrulent and hemoptoic). Due to the development of dyspnea and fever (38 °C) she was admitted to the Pneumology Clinic where CXR and CT scan (*Fig. 1*) showed a loculated pleural effusion with a thickened and irregular pleura, raising a high suspicion of malignancy. The pleural fluid analysis

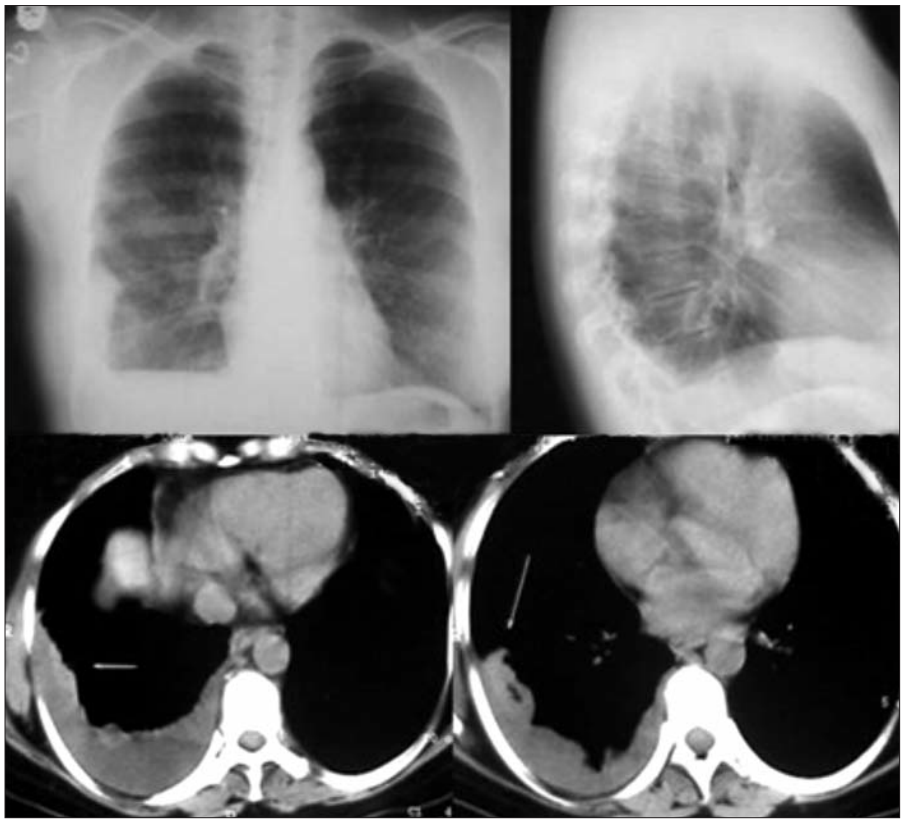

Figure 1. Preoperative CXR and CT scan

showed total protein levels of 4,1 g%, glucose levels of 100 mg% and an LDH level of 493 U/l; cytologic examination showed an increased cellularity with 30% eosinophils but no obvious atypical cells while the bacteriology was negative. Standard blood tests showed only a mild anemia (Hb level of 10,6 g/dl), all the other values being normal – including standard coagulation tests performed before major surgery (platelets count, fibrinogen,INR and thrombine time). Due to the recurrence of the effusion after repeated thoracenthesis and the persistent symptoms - including fever, the patient was referred to surgery for both diagnosis and treatment.

After a muscle-sparing thoracotomy we found a loculated pleural effusion with a thickened and irregular parietal pleura and 7 peripheric pulmonary tumors (one in the upper lobe and 6 in the lower lobe) ranging between 0,5 and 5 cm diameter (*Fig. 2*) and a small emphysema bleb. We performed a Fraser-Gourd decortication and multiple non-anatomic resections followed by reconstruction of the lower lobe (*Fig. 3*). A frozen section examination was not available. The post-operative course was complicated by a minor skin necrosis at the posterior edge of the thoracotomy, which required excision and secondary suture. Overall, the patient needed 2 days of ICU stay, the drains were removed after 6 days and she was discharged on the 16th postoperative day, with no particular complaints.

The pathologic examination of the specimens showed chronic non-specific pleural inflammation and pulmonary infarction in all the resected specimens, with no sign of neoplasia and no obvious lesions on the pulmonary vessels (*Fig. 4*). In order to explain the pulmonary infarction we have performed a cardiac and peripheric venous ultrasound examination which showed no abnormality, while the standard coagulation tests (platelets count, INR, prothrombine time and fibrinogen levels) were normal. A detailed analysis of

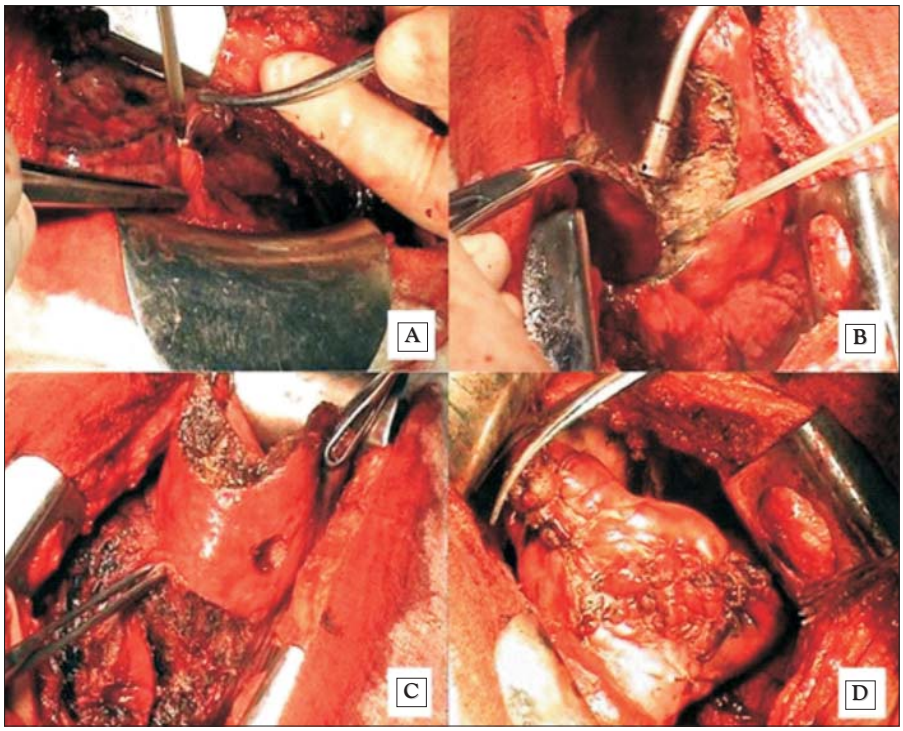

Figure 2. Intraoperative images. A – loculated effusion requiring decortication. B, C – multiple non-anatomic pulmonary resections. D – reconstruction of the right lower lobe

coagulation and detection of a pro-coagulant status were not available. The patient was placed on antiaggregant therapy (aspirine) and oral dicumarinic anticoagulation with an INR target between 2-3, which was abandoned due to the poor compliance of the

Figure 3. Operative specimens – macroscopic aspect

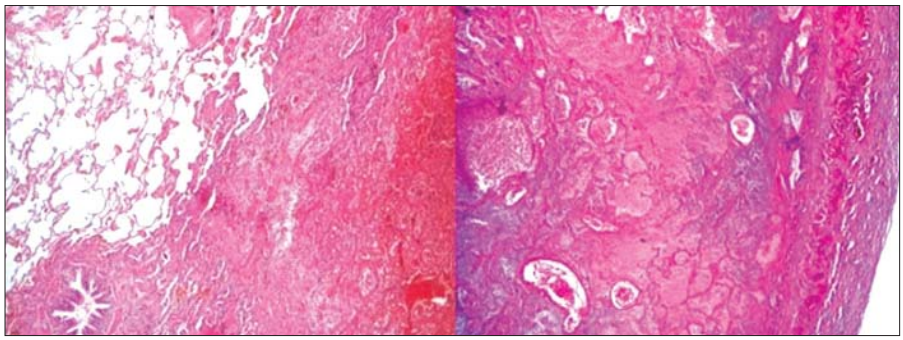

Figure 4. Pathologic examination (A) HE - 10, (B) HE - 20X: pulmonary infarction with no signs of malignancy

patient. A follow-up performed at 26 months after surgery showed no signs of recurrence (neither pleural effusion, nor tumor) but the patient suffered a massive fatal stroke at 32 months after surgery, probably due to a new thrombotic event.

Discussions

Establishing the etiology of a pleural effusion in an oncological patient involves a great responsability and is not always an easy task. Although malignant involvement of the pleura is frequent in advanced stages of the disease, pathologic confirmation of the presence of the malignant cells (cytology or biopsy) is mandatory since there are many other possible causes with a totally different treatment and prognostic (2, 5, 6). In patients in whom the pleural fluid analysis is not concludent, thoracoscopy with direct pleural biopsy usually clarifies the diagnostic (7).

The CT scan (performed at a less than optimal quality using the technology available at that time) did not show clear pulmonary nodules, raising the main suspicion of pleural metastases.A retrospective review of the case showed 2 elements suggestive for pulmonary infarction: a triangular shape of the opacity on the CXR, but without obvious parenchymal correspondence on the CT scans and an increased ratio of eosinophils in the pleural liquid. The later is extremely non-specific and may be found in many other diseases (8-10). On the other hand, a negative cytology is also frequently encountered in patients with proved malignant pleural effusion (11,12) while pleural effusions secondary to pulmonary infarction are usually small and with a self limited evolution (13).

It is to note that the patient had a relatively long hospitalisation and no suspicion of pulmonary infarction was raised despite multidisciplinary examination (pneumologist, thoracic surgeon, anesthesiologist, cardiology specialist). In the available literature we found small series of patients with pulmonary infarction presenting with atypical imagistic and clinical features which requiried surgical biopsy for diagnosis (14,15). We must also admit that the modern approach of such cases involves thoracoscopy / VATS approach and intraoperative frozen-section examination, both of them not available in our unit at that time. A detailed evaluation of the coagulation status would have probably identified abnormalites predisposing to thrombosis (16). The poor compliance to anticoagulant therapy has also worsened the prognosis, the death of the patient being probably the result of a new thrombotic event located in the brain arteries.

The treatment of non-infectious and non-malignant pleural effusions is a matter of debate with no clear guidelines available (17, 18). In our case, thoracotomy played a major diagnostic role:avoiding an useless chemotherapy and allowing the indication for long-time anticoagulant therapy. It has also allowed the cure of a recurrent pleural effusion, avoiding the progress towards a frank empyema requiring eventually a more extensive and mutilating surgery (19-22).

Conclusions

The case is interesting due to the rarity of the

disease in a challenging clinical situation. Considering this case as "inoperable" would have resulted in an useless chemotherapy and progression towards a more severe pleuro-pulmonary suppuration. Pulmonary infarction should be always taken into considerration as a possible cause of recurrent pleural effusion.

Conflict of Interests and Source of Funding

None.

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