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Abscess mimicking lung metastasis in a 10-year-old boy – case report

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Summary

Background:

Malignant pulmonary tumours in children are very rare; the majority are metastases. Nonspecific radiographic findings of these abnormalities are challenging and may delay the final diagnosis and treatment.

Case Report:

A 10-year-old boy was admitted to our hospital because of the clinical and radiographic symptoms and signs of pneumonia with abscess formation in the left lower lobe. After initial improvement on antibiotic therapy, a significant deterioration of the patient's condition was observed, together with progression in radiographic examinations. The patient was treated surgically and transferred to the Haematology and Oncology Department with a final diagnosis of pulmonary metastasis of clear cell sarcoma.

Conclusions:

Radiographic findings of metastatic diseases may mimic non-neoplastic pulmonary conditions. A lack of specific clinical symptoms and a confusing radiographic pattern in our patient with clear cell sarcoma lung metastasis caused serious diagnostic difficulties.

Key words:

pulmonary metastasis • children • clear cell sarcoma

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Background

Both the primary and the metastatic pulmonary neoplasms in children are very rare. Most of them are diagnosed by chance, during diagnostic work-up for other diseases or due to non-specific pulmonary symptoms, such as cough, atelectasis or opacities on chest X-ray [1]. Due to its low incidence, the disease is sometimes not even regarded as a differential diagnosis in chronic lung inflammations, cough, and atelectasis in children. This leads to a delayed introduction of a proper treatment and a worse prognosis.

We reported on a case of a 10-year-old boy with an atypical image of lung metastasis, causing a delayed diagnosis and treatment.

Case Report

A 10-year-old boy was admitted to our hospital due to clinical and radiological symptoms of a complicated pulmonitis

with an abscess of the lower lobe in the left lung, after a 3-day hospitalisation in a district hospital. The patient was in a moderately good general health and complained of pain of the left chest. He had had a fever and cough for the previous few days.

Physical examination revealed a limited mobility of the left chest wall, decreased percussion resonance and respiratory murmur, as well as insignificant rhonchi below the left angle of scapula.

Laboratory tests showed a higher number of white blood cells and increased CRP levels.

Chest X-ray revealed a thick-walled cavity with air-fluid level, strongly suggestive of an abscess in the left lower lobe (Figure 1). Computed tomography (CT) carried out 6 days later showed presence of the thick-walled cavity, 62×43×65 mm in size, filled with air and fluid, located in the left lower lobe, and a small amount of fluid in the

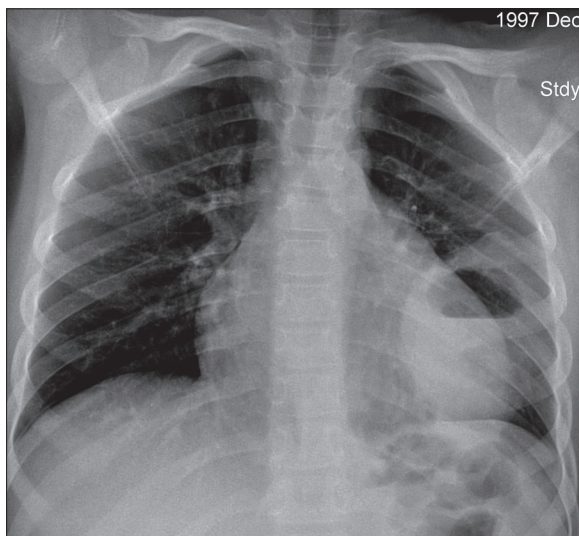


Figure 1. A plain chest radiograph showing a thick-walled cavity with air-fluid level in the left lower lobe.

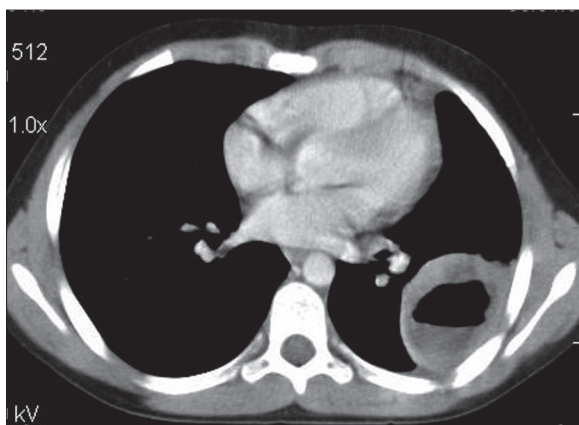


Figure 2. Mediastinal window of chest CT confirming the presence of the cavity filled with fluid and air in the left lower lobe.

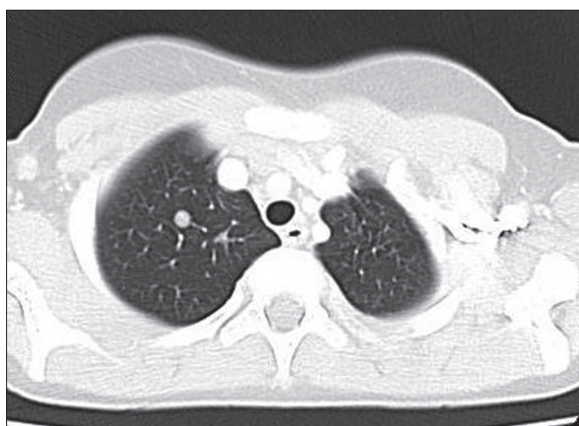


Figure 3. Chest CT, pulmonary window: one of 3 nodules found in the right lung.

oblique fissure. There were also three nodules measuring from 5 to 7 mm, located in the right lung, and an enlarged lymph node in the right axillary cavity (Figures 2, 3).

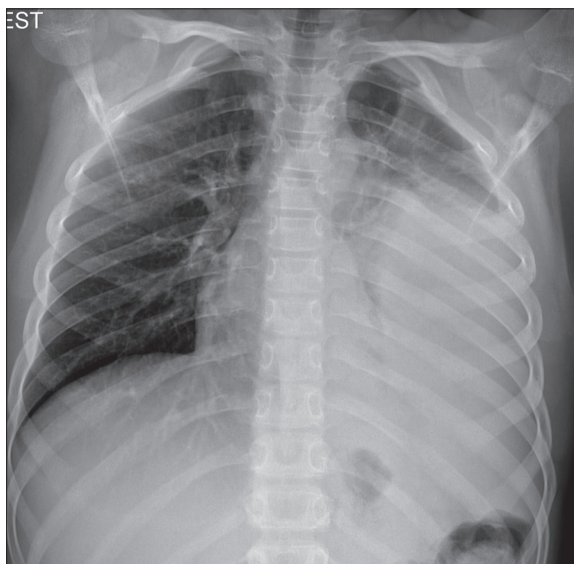


Figure 4. Chest radiograph with opacification of the basis and of the middle field in the left lung, suggestive of pleural fluid.

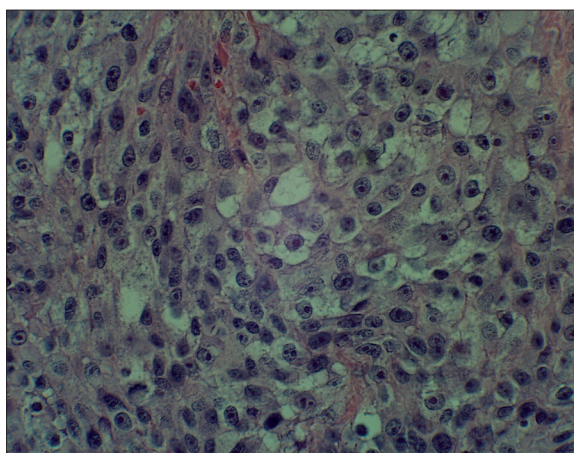


Figure 5. Hematoxylin-eosin, $\times 400$. Clear cell sarcoma. Typical clear polygonal cells with prominent vesicular nuclei and nucleoli.

On the basis of an initially diagnosed infectious abscess, antibiotic treatment was introduced.

Ultrasonographic examination of the abdominal cavity did not show any abnormalities. Blood cultures and bronchial secretion tested for the presence of bacteria, as well as tests for fungi and tubercle bacilli turned out to be negative.

After an initial clinical improvement, the patient deteriorated rapidly during the antibiotic therapy. Chest X-ray showed opacification of the lower and medial lobe of the left lung, with features characteristic for the presence of the pleural fluid (Figure 4).

In subsequent thoracotomy, 500 ml of blood were removed from the left pleural cavity, and an 8-cm-wide thick-walled cavity was found, with necrosis of a part of the wall. Histopathological examination of the sampled material allowed us to establish a final diagnosis, i.e. metastasis of a clear cell sarcoma (Figure 5).

An FDG-PET examination revealed metastases to both lungs, as well as to mediastinal, retroperitoneal, and left subclavicular lymph nodes, and bones. The patient was subjected to chemotherapy, but his state was rapidly deteriorating.

The boy died within 2 months and 1 week from the beginning of hospitalisation.

Discussion

Clear cell sarcoma (CCS) is a malignant, rarely occurring tumour of soft tissues, constituting 1% of all soft tissue sarcomas. Histogenetically, it is similar to melanoma, but it behaves as soft tissue sarcomas and gives metastases to lymph nodes [2]. CCS is characterised by a high incidence of local recurrence and metastases. The survival rate of patients with CCS amounts to merely 47%, irrespective of the surgical treatment, or, in many cases, of adjuvant therapy [3].

Our case of the 10-year-old boy with CCS metastases turned out to be a challenge because at the moment of hospital admission and preliminary examinations, the history of neoplasm was unknown, and the visualised lesions were diagnosed as infectious.

An oval opacification in the child's lung, with air-fluid level and concomitant clinical symptoms of infection indicated pulmonary abscess as diagnosis. In the differential diagnosis we included the following congenital infectious lesions: bronchogenic cyst, pulmonary sequestration, or congenital cystic adenomatoid malformation. In our patient, there were also three nodules present in the right lung. Nodules found in the lungs of patients with a diagnosed malignancy are treated by many paediatric radiologists as metastases. However, there are many lesions that can imitate them. These are i.a. granulomas, sarcoidosis, infections, infectious pseudotumours, benign tumours and atelectasis [4]. In children with a solid tumour located outside the chest, even up to 70% of single nodules found in the lungs during diagnostic procedures may be benign tumours. CT allows for a differentiation between benign and malignant lesions. This should be remembered to avoid a false overestimation of tumour stage and grade [5].

CT examination may also evaluate some features useful in the differentiation between benign and malignant cavitory nodules [6].

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Differential diagnosis in case of our patient included inflammatory nodules of different aetiology. Additional bacteriological, fungal and TB tests were performed, giving a negative result.

In our case, the disease progressed extremely rapidly and finally this was the histopathological examination of the material sampled from the tumour during thoracotomy, that allowed for a final diagnosis of CCS metastasis, a very rare malignant sarcoma of soft tissues.

A detailed analysis of the patient's history showed a nodule resection in the right axillary area, almost 6 years earlier, and a resection of an enlarged cervical lymph node one year later. Histopathological examinations of both these lesions showed a benign process. When reviewing the literature, we found a case of a 71-year-old man with a solid tumour of the axillary area, which was evaluated as a highly differentiated neoplasm built of spindle-shaped cells. Fourteen years later, the man developed a nodule in the lung. Repeated histogenetic and immunohistochemical examinations allowed for diagnosing CCS [7].

Due to the advancements in diagnostic techniques, the role of specialists in this field (radiologists and histopathologists) is still increasing. Their role is to inform clinicians about a suspected malignancy, because the choice of treatment depends directly on the diagnosis. A great emphasis should be put on the close cooperation between specialists from different fields and on the need of their continuous education.

Diagnostic difficulties in case of our patient were caused by the baseline radiological image of the lesions, which in case of no primary tumour and the presence of non-specific clinical symptoms caused a delay in the introduction of a proper treatment course.

Conclusions

Radiological image of metastases may mimic other pulmonary pathologies. In the reported case, the final diagnosis was delayed because of the non-specific clinical symptoms and baseline radiological features.