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Tension Pneumothorax-First Report of a Specific Treatment-Related Toxicity in a Sarcoma Patient

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Introduction

Soft tissue sarcomas (STS) originate from mesenchymal cells and potentially arise at any anatomical site. Complete resection, in some cases supported by neoadjuvant or adjuvant treatment, is the only curative approach [1]. Primary metastatic and recurrent disease is generally considered incurable. Metastases occur most frequently in the lungs. Pazopanib, an orally available, second-generation, multi-targeted tyrosine kinase inhibitor (TKI) has been approved for non-adipocytic, non-GIST STS after prior chemotherapy [2].

Pneumothorax is a rare, albeit well described complication in patients with pulmonary metastases from solid tumours, in particular from STS [3]. Most cases, however, represent asymptomatic findings upon imaging. The escalation to a potentially life threatening tension pneumothorax has not been described yet in adult cancer patients.

Case Presentation

A 48 year old male was diagnosed with undifferentiated high grade pleomorphic sarcoma at the right thigh. He was never smoker and did not have radiological signs of pre-existing lung disease. At initial diagnosis there was no evidence of distant metastases. After neoadjuvant chemotherapy with doxorubicin plus ifosfamide followed by local photon radiation, the tumor was completely resected. 6 months later, computed tomography (CT) scan of the chest demonstrated multiple bipulmonary and pleural metastases. Second line treatment with pazopanib was started. A CT scan after 12 weeks on treatment revealed haemorrhagic transformation of metastases and a right-sided ventro basal pneumothorax. The patient was asymptomatic, and treatment was continued. On repeated chest x-rays pneumothorax was followed up without any changes. Another four weeks later, a CT scan revealed right-sided tension pneumothorax with consecutive mediastinal shift and impression of the heart (Figure 1). The patient remained oligosymptomatic, complaining of mild dyspnea on exertion. A chest tube was placed with sufficient unfolding of the affected lung. However, recurrent pneumothorax developed immediately after stopping suction (Figure 2), so that talcum pleurodesis was necessary. VATS showed multiple small, superficial, hypervasculated tumours. The findings admonish that CT scan in this case underestimates the number of peripheral lesions. While at the same time no loss of integrity of visceral pleura was seen. Treatment with pazopanib was continued. A few days later, a contralateral pneumothorax was detected and again treated successfully with primary talcum pleurodesis (Figure 3).

The overall incidence of spontaneous pneumothorax in cancer patients is unknown, but seems to be very low, affecting less than 1% of patients receiving chemotherapy. SSP have been published

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Abbreviations:

STS = Soft Tissue Sarcoma, VATS = Video-assisted Thoracic Surgery, SSP = Secondary Spontaneous Pneumothoraces, CT = Computer Tomography, TKI = Tyrosine Kinase Inhibitor, SP = Spontaneous Pneumothorax

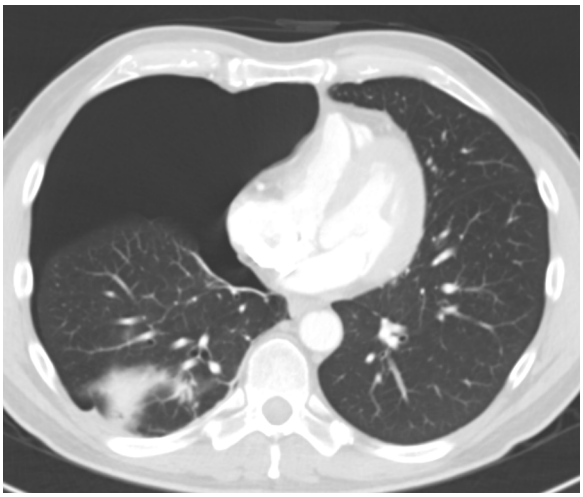

Figure1: CT-scan thorax during treatment with pazopanib 800mg daily: right sided tension pneumothorax with mediastinal shift and impression of the heart.

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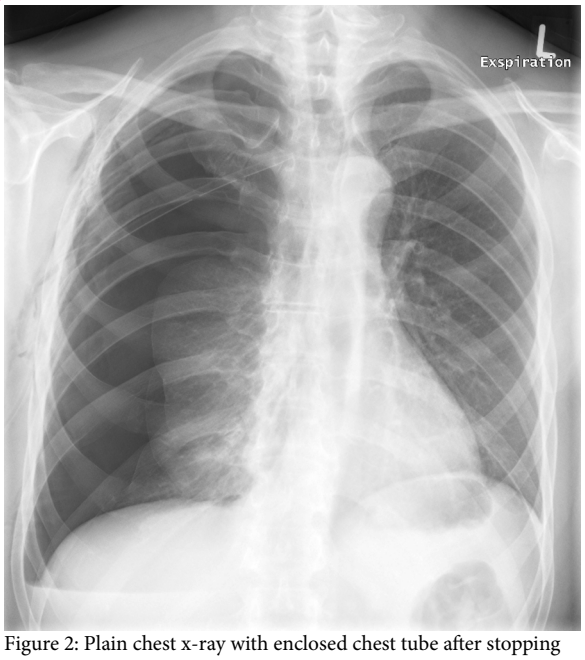

Figure 2: Plain chest x-ray with enclosed chest tube after stopping suction, unfolding a relapsed pneumothorax.

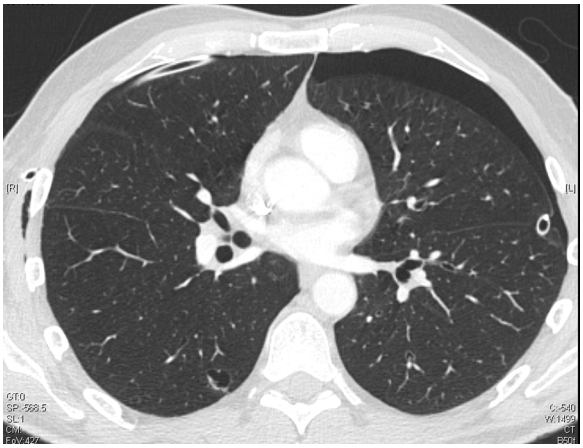

Figure 3: CT-scan thorax with enclosed chest tubes both sided. Prior to this scan VATS with talcum pleurodesis right sided was completed.

in a variety of different tumors. Sarcoma patients seem to be more frequently affected. While STS patients have a generally low risk of developing a SSP, treatment with antiangiogenic agents seems to increase the risk [4]. Clinical trials with pazopanib in STS patients reported SSP at a rate of 3.3-14%, i.e. significantly more frequent than the assumed incidence in patients receiving palliative treatment using other drugs [2, 5].

In conclusion, SSP is a rare, but clinically important complication in STS patients with pulmonary metastases treated with pazopanib and should be discussed prior to treatment. Tension pneumothorax is a rarity and the risk might be minimized when SSP are treated immediately after detection.

Competing Interests

The authors have no competing interests with the work presented in this manuscript.

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