

# PULMONARY TUMOR EMBOLISM SECONDARY TO RECURRENT CHONDROSARCOMA PRESENTING AS DYSPNEA: A CASE REPORT

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PJR April - June 2019; 29(2): 146-148

## ABSTRACT

Pulmonary embolism is a common entity however pulmonary tumor embolisms (PTE) are rare and under reported source of pulmonary embolisms. Tumor embolism (PTE) is a rare manifestation of malignancy. PTE can be seen secondary to carcinoma and sarcomas. Only few cases of pulmonary TE has been reported in the literature. Chondrosarcoma accounts for ~15% of all primary malignant bone tumors and its evidence of PTE is rare. We report a case of PTE in segmental pulmonary arteries associated with recurrent chondrosarcoma of the left humerus that presented with dyspnea. There were associated peripheral wedged shaped malignant consolidations.

**Key words:** Chondrosarcoma, tumour embolism, dyspnea.

## Introduction

Acute pulmonary embolism (PE) is common cardiovascular emergency however pulmonary tumor embolism is a rare entity and unique complication of malignancies.<sup>1</sup> Acute pulmonary embolism has different presentations ie from asymptomatic to causing sudden death.<sup>2</sup> Tumor embolism (TE) has been reported in 0.3–26% of patients with a solid malignancy at autopsy and is associated with a mortality rate of 8%. Majority of the TE occurs due to mucin-producing tumors of the breast, lung, colon, and stomach but can also occur from sarcoma.<sup>3</sup> The clinical presentation of PE and TE can be quite similar and patients may present with dyspnea, cough, tachypnea, and tachycardia.<sup>4</sup> Diagnosis of chondrosarcoma is based on cross sectional imaging, however histopathological diagnosis by biopsies or surgical resection is the gold standard. Treatment of these tumors by chemotherapy and radiotherapy is ineffective due to their resistance.<sup>5</sup>

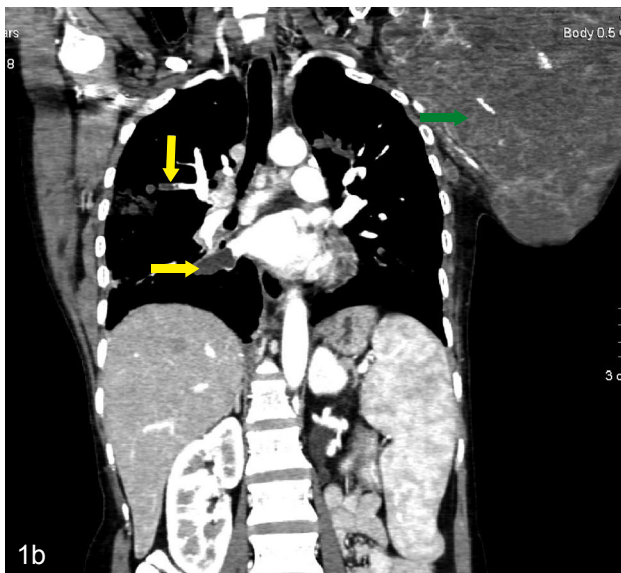
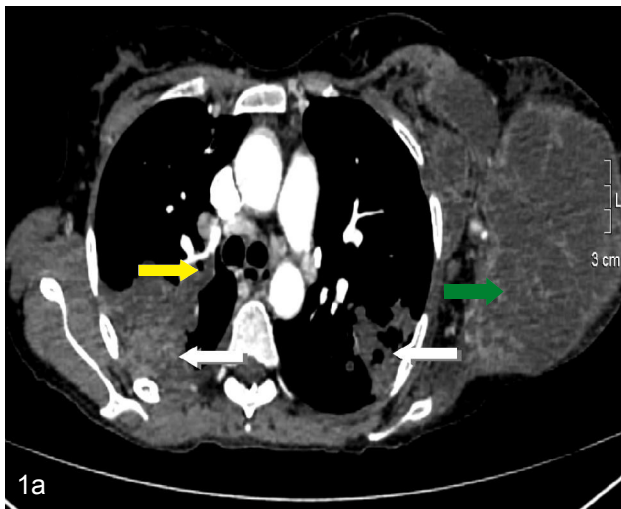
## Case Presentation

A 25-year-old girl presented to the oncology depart-

ment at our hospital with acute onset dyspnoea and fatigue. She had a past history of histopathologically proven chondrosarcoma left humerus which was resected one and a half year back. The distal humerus with its shaft was also resected during surgery. A large recurrent mass was seen at the left proximal arm. A contrast enhanced computed tomographic imaging scan of the chest and abdomen done with Toshiba prime aquilion 128 slice showed a large necrotic mass lesion (20 x 21 cm) with peripheral enhancement epicentered around proximal humerus representing recurrent mass with internal chondroid matrix (Fig. 1). Large necrotic left axillary lymph nodes were seen (Fig. 1a). Intraluminal filling defects were noted in the right inferior pulmonary vein and segmental branches of both upper, lower lobes pulmonary arteries and right middle lobe segmental arteries which showed mild post contrast enhancement (about 15 -20HU) which raised suspicion of macroscopic intravascular tumour embolism (Fig. 1). Few peripheral wedge shaped hypodense mildly enhancing areas of consolidation without any internal air bronchograms and convex margins were noted in both upper and

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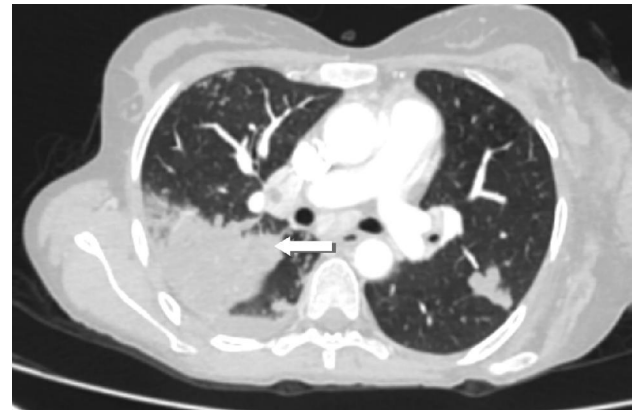
Submitted 8 May 2019, Accepted 14 June 2019



**Figure 1a and b:** Axial and sagittal reformatted images of CE CT chest and upper abdomen showing recurrent tumor (green arrows) and pulmonary tumor embolism in segmental pulmonary artery and right inferior pulmonary vein (yellow arrow). There are peripheral wedge shaped metastatic consolidations (white arrows)

right lower lobes which were in the distribution of segmental tumoral pulmonary emboli (Fig. 1a and 2). Further it was noted that the pulmonary consolidation areas appeared similar in appearance and enhancement to the recurrent chondrosarcoma of the shoulder raising possibility of metastatic pulmonary consolidations. Multiple soft tissue nodular areas also seen in both lower lobes which were suspicious of pulmonary parenchymal metastasis. Based on these imaging findings diagnosis of pulmonary tumour embolism with metastatic consolidation was made. Patient also had hepatosplenomegaly

(Fig. 1b). The patient was referred back to the oncology team for further work up and management.



**Figure 2:** Axial CE CT lung window showing peripheral wedge shaped area of consolidation in right lung

## Discussion

Acute pulmonary embolism is considered a cardiovascular emergency. Tumor embolism is an uncommon complication of malignancies, and detached thrombi or tumors may cause massive pulmonary embolism in patients with malignancies. The differentiation and proper diagnosis of the type of pulmonary embolism is important as the treatment and prognosis differs considerably.<sup>1</sup>

As malignancy itself is a risk factor for pulmonary embolism. TE can also be seen with malignancy and presents with dyspnea.<sup>2</sup> Pulmonary TE is often difficult to diagnose and differentiate from venous thromboembolism at cross sectional imaging. Chondrosarcomas are the third most common malignancy which often metastasize to the lung parenchyma, intravascular TE has rarely been reported in chondrosarcoma.<sup>3</sup> In our patient there were multiple foci of tumor embolism involving the segmental pulmonary vessels.

The incidence of pulmonary TE has been reported to occur in about 0.9 to 2.4% of patients with carcinomas. The majority of cases are associated with breast, lung, and gastric carcinoma. According to Alirhayim Z few cases of chondrosarcoma are reported in the literature causing tumor embolism.<sup>4</sup>

Pulmonary TE can show different patterns on chest CT. It can present with a tree-in-bud pattern in microscopic tumor embolism which is commonly seen in

other diseases such as inflammation or infection of the bronchi, pulmonary infarct, enlargement of central pulmonary arteries, parenchymal consolidation.<sup>6</sup> In our case patient had macroscopic intravascular tumor emboli with pulmonary metastatic consolidations. Tumor embolization is a rare but known complication of malignancy. According to Liyuan Lv, Xueqian wang, and Ying zhang their patient was diagnosed with chondrosarcoma of the thoracic vertebra and presented approximately 3 years with right atrial mass after the initial diagnosis.<sup>5</sup> In our case patient presented with pulmonary tumor embolism approximately after 18 months after the surgical resection and diagnosis. Poo-Sing Wong reported a 14-year-old boy with knee osteosarcoma. He presented with a worsening dyspnea. CE CT chest showed pulmonary TE in both the right and left pulmonary arteries for which he underwent pulmonary embolectomy under cardiopulmonary bypass which proved the filling defects to be TE.<sup>7</sup> Tumour embolism is commonly mistaken for venous thromboembolism and anticoagulation is wrongly initiated. Anticoagulation and thrombolysis are not beneficial for TE and considered contraindication as it may result in hemoptysis.<sup>8</sup> The distinction between PE subtypes is important as the prognosis and management may differ.<sup>9</sup> An evaluation of 1457 cadavers in patients previously diagnosed with neoplasias revealed 10% had a TE.<sup>10</sup>

## Conclusion

Tumour embolism is a rare but deadly cause of pulmonary embolism in sarcoma therefore a high index of suspicion is necessary in individuals who present with respiratory symptoms, especially dyspnoea. Diagnostic confirmation with an enhanced computed tomography scan of the chest should be immediate. Unlike venous thromboembolism, pulmonary embolectomy is the preferred therapeutic approach.

**Conflict of Interest:** None

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