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# A RARE PRESENTATION OF PULMONARY SARCOMATOID CARCINOMA WITH LEFT ATRIAL INVOLVEMENT AND SPINAL METASTASIS PRESENTING WITH AN ISCHEMIC INFARCT.

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## ABSTRACT:

Pulmonary Sarcomatoid Carcinoma is a rare, aggressive tumor comprising of both epithelial and mesenchymal cells. It is important to distinguish it from other lung tumors due to its poor prognosis and extensive metastasis. We present a case of a 36 year old female patient who initially presented with right sided weakness and slurred speech due to an ischemic infarct of the left basal ganglia. Further workup revealed a lung mass extending to the left atrium with spinal metastasis. Sarcomatoid Carcinoma remains a diagnostic challenge due to its early recurrence and atypical presentation.

**Key words:** sarcoidosis, stroke, metastasis, infarct

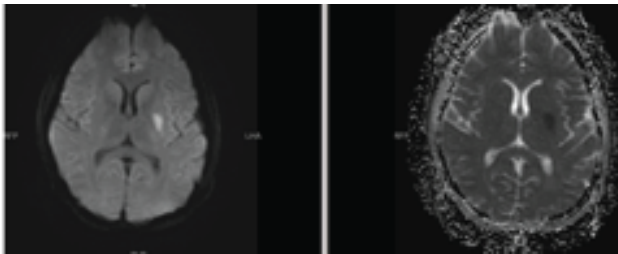
**INTRODUCTION:** Sarcomatoid Carcinoma (SC) is a rare malignant tumor characterized by both sarcomatous and carcinomatous features. Despite an epithelial origin, the tumor contains a combination of both epithelial and mesenchymal components<sup>1</sup>. Found in various organs, this malignancy comprises about 1% of all lung neoplasms It can appear centrally or peripherally in the lungs but is more commonly found as a peripheral solitary mass with an affinity for the upper lobes<sup>2,3</sup>. Smoking, alcohol use, previous history of radiation therapy and asbestos exposure are some of the established risk factors of this condition<sup>4,5</sup>. The disease is four times more commonly found in men than women. The average age of diagnosis ranges between 65 to 75 years<sup>6</sup>. Though it has a variable clinical presentation, some typical symptoms of pulmonary SC include chest pain, cough, dyspnea and fever<sup>7</sup>. It is important to distinguish this tumor from other mesenchymal neoplasms due to its aggressive nature, poor prognosis and extensive metastasis. Majority of cases are diagnosed at a later stage when there is multiple metastasis. We present a rare case of a patient with Pulmonary Sarcomatoid Carcinoma with left atrial involvement and spinal metastasis who presented with an ischemic infarct of the left basal ganglia. Pulmonary Sarcomatoid Carcinomas represent 0.2-1% of all lung cancers. We report the first case of

female patient non-smoker with pulmonary sarcomatoid carcinoma with left atrial involvement and spinal metastasis who presented with ischemic infarct from Pakistan.

## Case report:

36-year-old Asian lady without any prior known comorbidities presented to the emergency department with right sided body weakness and numbness with associated slurred speech for one day. During the last 1 week she had shown recurrent episodes of paresthesias and numbness in right upper and lower extremity. In between these episodes, patient was back to normal without any residual symptoms. On examination, she had a blood pressure of 110/70 mm Hg, a heart rate of 80bpm, a temperature of 37°C, and a respiratory rate of 18 breaths per minute. On neurological exam she was awake alert and oriented. She had weakness in right arm with power of 4/5, chest and cardiac examination was normal. ECG showed normal sinus rhythm. Baseline laboratory investigations were within normal limits. 3 months prior to admission she had dry cough, progressive exertional dyspnea and palpitations for which workup was done her chest X-ray done in January 2019 showing right upper lobe consolidation, followed by CT chest in February 2019, which revealed irregular, partially enchaining hyper

dense heterogenous soft tissue mass in right hilar region (6x2 cm) causing pressure effect to adjacent structures encasing right bronchus. Multiple small round nodules were noted in both lungs. On echocardiogram multiple echogenic masses in left atrium were noted with largest echogenic mass (4x6 cm) in occupying 80% space with extension to the mitral valve leaflet anteriorly causing obstructive flow. She had no history of tobacco, alcohol or use of recreational drugs no history of weight loss. Strong family history of malignancy in grandparents (breast and uterine) and uncle (prostate carcinoma) was present. She had past history of leiomyoma and myomectomy was done in 2016. Based on history and relevant investigations, an initial impression of a possible left sub-cortical infarct, with possibility of involvement of lung mass was made and brain imaging with contrast was ordered with workup for malignancy. Magnetic resonance imaging (MRI) of the brain with gadolinium contrast revealed. Acute left basal ganglia infarct. Middle cerebral arteries to be patent and normal in calibre. Magnetic resonance angiography (MRA) and magnetic resonance venography (MRV) were normal.

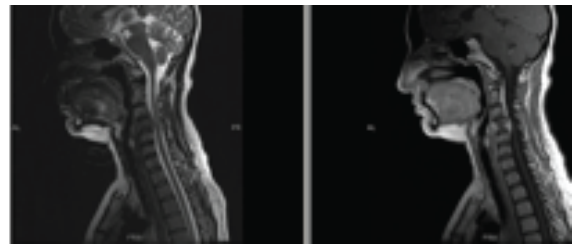


**Figure 1 A and B showed Left basal ganglion infarct with diffusion restriction and ADC drop out.**

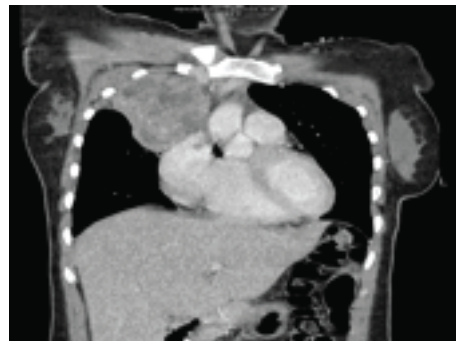
Cervical MRI with contrast was done which showed left paravertebral soft tissue lesion extending from C3 to C5 vertebral levels, these lesions were suggestive of metastatic origin.

C.T chest with contrast was repeated later also which was suggestive of large heterogeneous right upper lobe neoplastic mass lesion, measuring approximately 99 x 83 x 139 mm in AP, transverse and craniocaudal dimensions associated with thrombus in pulmonary vein extending up to the left atrium, likely representing tumor thrombus in left atrium and multiple bilateral pulmonary metastatic deposits .

C.T guided biopsy of right upper lobe mass showed sarcomatoid carcinoma, suggestive of either metastasis from sarcomatoid carcinoma of primary lung origin. In setting of left atrial invasion and thrombo emboli spread to brain the patient was starts anticoagulation her neurological status improved and she was transferred to oncology for chemotherapy.



**Figure 2 showing Abnormal signal with enhancement involving C4 vertebral body with associated left paravertebral soft tissue lesion extending from C3 to C5 vertebral levels.**



**Figure 3 A large heterogeneously enhancing soft tissue mass lesion in right upper hemithorax arising from right lung**

### Discussion

The World Health Organization has defined Pulmonary Sarcomatoid Carcinomas as 'poorly differentiated non-small cell lung carcinomas (NSCLCs) containing a sarcoma-like element (malignant spindle or giant cells) or sarcomatous component'. Based on this definition, these tumors have been further classified into 5 types called pleomorphic carcinoma, giant cell carcinoma, carcinosarcoma, spindle cell carcinoma and pulmonary blastoma<sup>8</sup>. These tumors are diagnosed based on their characteristic morphological appearance on light microscopy. Immunohistochemistry acts as an adjunctive diagnostic tool to help rule out other morphologically similar lesions.

A, confirming the diagnosis of pleomorphic carcinoma. Studies have shown that using cytokeratin AE1/AE3 is usually enough to support the diagnosis of pulmonary SC<sup>9</sup>. TTF-1 and Napsin have also been implicated in the diagnosis of SC.

Typically, pulmonary SC patients are elderly males with a chronic history of smoking. Our patient did not have the usual risk factors of pulmonary SC. She was 45 years of age, 20 years younger than the mean age of diagnosis and had no history of smoking or alcohol

abuse. By the time that she presented to the hospital, the tumor had metastasized to the C3- C5 vertebral levels. A previous case report has documented SC metastasis from the lung to the T8 vertebrae of a 63-year-old male who was a chronic smoker that presented with back pain<sup>10</sup>. the tumor was causing severe spinal stenosis. In our case the tumor had not impinged deeply enough to cause severe spinal stenosis. However, the cancer itself is quite uncommon and such a presentation with spinal metastasis with no symptoms of pain 'tingling or numbness.

Embolization to the central nervous system may result in transient ischemic attack, stroke, or seizure. Strokes are often recurrent and embolic and abrupt<sup>14</sup>. Cardiogenic emboli account for 15–30% of ischemic strokes<sup>5</sup>.

Hypercoagulability in malignancy is common as the coagulation cascade is activated by tumor cells, resulting in venous thrombosis in distant sites<sup>10,11</sup>.

The ability of malignant cells to interact with the blood cells of the hemostatic system (endothelial cells, platelets, and monocytes etc.), induce procoagulants and inflammatory cytokines contribute to the pathogenesis of a stroke in these patients<sup>14</sup>.

D-dimer, a degraded product of fibrin polymer, is a useful indicator of hypercoagulability, which frequently increases in cancer-associated stroke. Multiple embolic strokes with elevated D-dimer alert the possibility of

occult cancer. Malignancy-associated thrombosis tends to follow an anatomic pattern of involvement and includes large artery bifurcations, and small vessel disease are common stroke mechanisms<sup>12,13</sup>. In our patient D-dimer was normal.

The embolic showering occurs when tumor fragments are sheared and enter the body's circulation, resulting in either embolic occlusion or metastatic seeding at distant sites<sup>16,17</sup>. The incidence of lung cancer with atrial extensions that progress to showering emboli is unclear.

Due to poor prognosis and limited life expectancy, a multidisciplinary approach is necessary to address the physical, emotional, and spiritual needs of the patient and family regarding end of life and goals of care. There is no clear evidence that chemotherapy prolongs survival.

### Conclusion:

An atypical presentation and lack of concrete risk factors in certain patients continues to make pulmonary sarcomatoid carcinoma a diagnostic challenge. Although tumor emboli to cerebral are rare but the possibility should be considered in differential diagnosis of stroke when dealing with patients who give off the slightest suspicion of malignancy as earlier diagnosis will lead to a better patient outcome.

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**Hina Imtiaz;** data collection, concept, data analysis, manuscript writing, manuscript review

**Muhammad Dawood Amir Sheikh;** data analysis, manuscript writing, manuscript review