



A Rare Clinical Entity of Lung Cancer: Metastatic Peripheral Arterial Embolism

Akciğer Kanserinin Nadir Bir Klinik Tablosu: Metastatik Periferik Arter Embolisi

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Abstract

Lung cancers rarely metastasize to intracardiac ventricular wall and subsequently embolizes to systemic circulation, causing arterial occlusion. The current study reports a case of lung cancer with peripheral arterial embolism. This is unique case report because the first diagnostic tool of bronchogenic carcinoma was embolectomy material during hospitalization and the initial evaluation stage of the patient. Tumor embolization should be considered in the differential diagnosis in an abrupt cessation of peripheral arterial circulation.

Key words: Tumour embolism, metastasis, bronchogenic carcinoma, cardiac tumours.

Özet

Akciğer kanseri, nadir olarak kalbin iç ventrikül duvarına metastaz yapar ve sonrasında buradan kaynaklanan emboli sistemik dolaşıma girerek atar damar tıkanıklığına yol açar. Burada, periferik atar damarında emboliye yol açan bir akciğer kanseri olgusunu sunmaktayız. Bu olgunun ilginç tarafı, hospitalize edilip ilk değerlendirme aşamasında, periferik arter embolectomi materyalinden akciğer kanseri tanısı konulmuş olmasıdır. Periferik arter dolaşımının ani olarak durmasında, ayırıcı tanıda tümör embolisi de akılda tutulmalıdır.

Anahtar Sözcükler: Tümör embolisi, metastaz, akciğer kanseri, kalp tümörleri.

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Peripheral arterial embolism arising from lung cancer is uncommon (1-4). Malignant primary lung tumors invading pulmonary vessels, atrial myxomas and other primary cardiac tumors are the main causes of arterial embolism, which is a very unusual clinical entity (5). Metastatic tumors may involve the pericardium and signs of pericardial effusion and tamponade may be observed. In general, arterial embolism occurs either intraoperatively or in the immediate postoperative period of bronchogenic carcinoma. The most frequently reported sites of tumor emboli are aortic bifurcation, femoral vessels, and cerebral arteries (2). Nearly 200 cases of arterial embolism have been reported in the literature from malignant tumor tissue (3, 6). Intravenous digital angiography, contrast enhanced computerized tomography, MRI, and echocardiography are the diagnostic methods. Regarding treatment, once the embolism has appeared, it should be surgically removed, and anticoagulation, vasodilator treatment should be initiated.

In the literature only a few of reports related to peripheral arterial embolism arising from bronchogenic carcinoma have been reported. Arterial tumor embolism may be the first and most important issue during the course of the tumor. Herein, we report a quite rare occurrence of a metastatic bronchogenic tumor to the left ventricle and presented with sudden occlusion of the left brachial artery during the diagnostic stage of the patient.

CASE

A 77-year-old male smoker with a history of COPD presented with chest pain and breathlessness for ten days. The chest radiograph and computed tomography of the chest revealed a heterogeneous, ill-defined mass originated from left upper lobe bronchus, extending and invading the hilar structures (Figure 1). Transthoracic echocardiography confirmed an intracardiac mobile mass, implanted in the lateral wall. Positron emission tomography revealed pulmonary malignancy and distant metastasis with increased FDG uptakes in a left hilar mass, satellite lesions on the upper lobe posteriorly destructing the fourth rib, subcarinal lymphadenopathy, left ventricle, and liver (Figure 2). Fiberoptic bronchoscopy revealed an endobronchial lesion in the lingular bronchus, which was biopsied. While the patient was hospitalized and awaiting pathologic results, he complained of pain, numbness in the right arm, and had cyanosis. An immediate angiography confirmed total occlusion of right brachial artery and an immediate embolectomy was performed and circulation restored. Subsequently, pathology of the bron-

choscopic biopsies revealed squamous cell bronchogenic carcinoma and the cytology of embolectomy confirmed metastasis of lung cancer (Figures 3 and 4). Upon discharge, the patient was referred to the oncology department, but the patient died one month later.

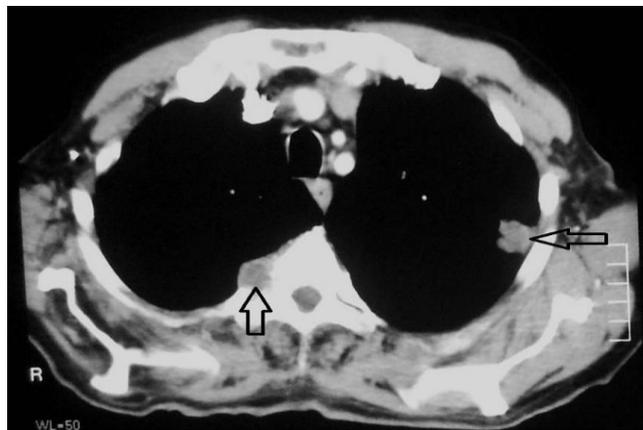


Figure 1: Computerized tomography revealed pulmonary solid nodular lesions (arrows)

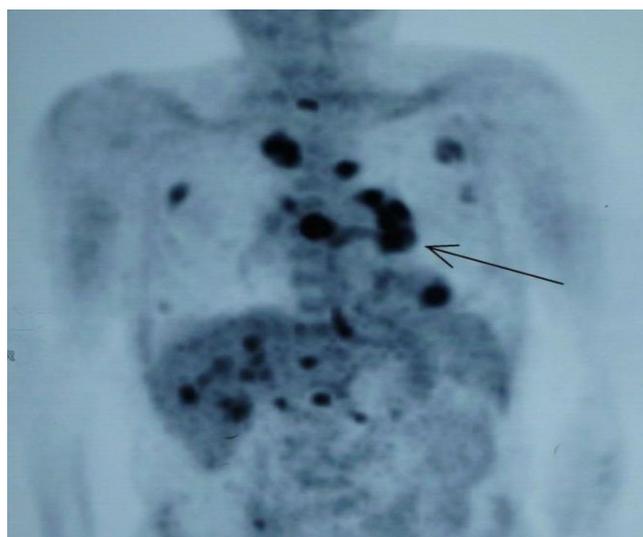


Figure 2: PET-CT revealed multiple distant metastases, including the left ventricular metastatic mass on lateral cardiac wall with SUVmax of 9.93 (arrow)

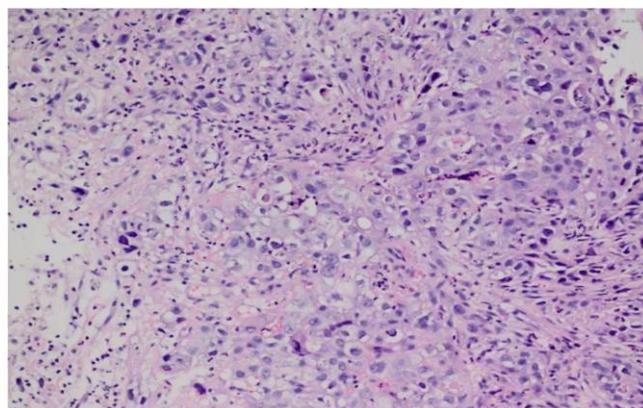


Figure 3: Atypical squamous cells composing solid islets with distinct nucleolus and hyperchromatic nucleus (HEX200)

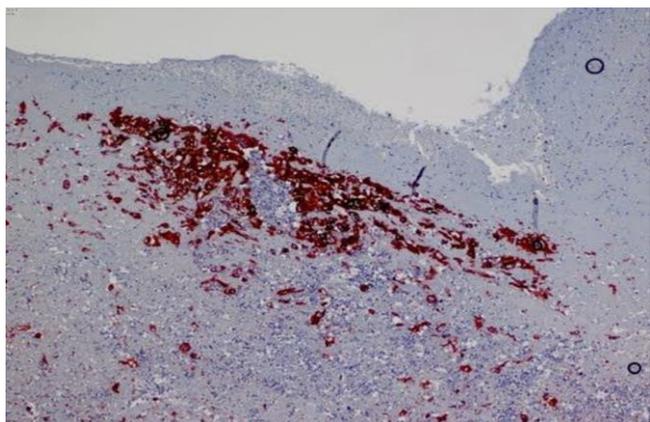


Figure 4: Atypical epithelial cells embedded in the embolectomy material diffusely stained with Pan-Cytokeratin (Pan-CKX100)

DISCUSSION

A macroscopic peripheral arterial tumor embolus is an uncommon event. Large and centrally located bronchogenic tumors were most often responsible for arterial tumor emboli (1). The event could also be the presenting manifestation of a bronchogenic carcinoma, as presented here. Another common source of the arterial emboli is from the left atrial myxoma and sarcomas, primary or secondary bronchogenic carcinoma. Arterial embolization highlights the advanced disease, and poor prognosis with significant comorbidity. The source of tumor emboli could be the left atrium or pulmonary veins (7). The mechanism of primary and metastatic lung cancer embolism is considered to involve a tumor that invades and propagates within a pulmonary vein. When a tumor fragment breaks off in the pulmonary vein, it travels through the left heart chamber and subsequently lodges in a systemic artery. Infarction results when the tumor fragment is large enough to occlude the tissue's arterial perfusion. Most tumor emboli occur during surgery; a few occur in the early postoperative period (8-12). The delayed occurrence of these emboli may be due to tumor fragments that remain loosely adhered to the site of pulmonary vein ligation and then embolize after surgery with coughing or other movement, or perhaps emboli are temporarily detained in the left ventricular trabeculations or chordae tendineae (1,2). Arterial embolism related to thoracic surgery is likely due to the manipulation of the pulmonary hilum or division of the pulmonary vein, which dislodges the tumor from the pulmonary vein. The other scenario of tumor embolization occurs in the absence of pulmonary surgery and is assumed to result from spontaneous fragmentation of the propagated tumor within a pulmonary vein (4,11). Xiromeritis et al. (3) identified 104 reported

cases of arterial tumor emboli and 46 of the cases arose from primary lung cancer and 33 patients with metastatic lung cancer, and these were responsible for most of these cases. The most common cause of the metastatic lung neoplasms was sarcoma, which accounted for 14 cases. Arterial tumor embolism mostly occurred spontaneously and fewer of cases were associated with thoracic surgery. In the review of Whyte et al. (2), tumor embolization to cerebral arteries occurred in half of the cases, and to multiple locations occurred in one-third of patients. Immediate diagnosis of an arterial embolism is very critical and immediate intervention is required to restore circulation and to avoid tissue necrosis. Routine two dimensional or transesophageal echocardiography may be useful in diagnosing large and centrally located intracardiac tumors (8). This is a unique case with a metastatic mass invading the left ventricle and the source of peripheral embolism. Overall prognosis is poor in these cases despite immediate diagnosis and aggressive surgical interventions, as these patients tend to die from extended metastatic disease.

CONFLICTS OF INTEREST

None declared.

AUTHOR CONTRIBUTIONS

Concept - H.Ç., S.K., A.G., A.K., H.T., G.İ., R.B., Ü.Ş.; Planning and Design - H.Ç., S.K., A.G., A.K., H.T., G.İ., R.B., Ü.Ş.; Supervision - H.Ç., S.K., A.G., A.K., H.T., G.İ., R.B., Ü.Ş.; Funding - H.Ç., S.K., A.G., H.T., Ü.Ş.; Materials - H.Ç., S.K., A.G., H.T., Ü.Ş.; Data Collection and/or Processing - H.Ç., S.K., A.G., H.T., Ü.Ş.; Analysis and/or Interpretation - H.Ç., S.K., A.G., H.T., Ü.Ş.; Literature Review - H.Ç., S.K., A.G., H.T., Ü.Ş.; Writing - H.Ç., S.K., A.G., H.T., Ü.Ş.; Critical Review - H.Ç., S.K., A.G., A.K., H.T., G.İ., R.B., Ü.Ş.

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