Olgu Sunumu / Case Report
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Successful transcatheter arterial embolization due to massive hemoptysis in a metastatic lung cancer patient with tumoral blood supply from the inferior phrenic artery: A case report

Masif hemoptizi nedeniyle başvuran tümöral besleyici arteri inferior frenik arter olan metastatik akciğer kanserli bir hastada başarılı transkateter arteriyel embolizasyon: Bir olgu sunumu

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ÖZET

İnferior frenik arter kanaması ve buna sekonder masif hemoptizi komplikasyonuyla ilişkili vakalar nadiren bildirilmiştir. 17 yaşında erkek hasta hemoptizi, halsizlik, bilinç bulanıklığı şikayetleri ile hastanemize başvurdu. Hastanın sinoviyal sarkom nedeniyle ameliyat öyküsü ve sağ akciğerde metastatik kitlesi vardı. Yapılan BT Anjiyografi incelemesinde metastatik akciğer kitlesini besleyen inferior frenik arterde hemoraji saptandı. Trans-arteriyel embolizasyon (TAE) ile başarılı bir şekilde tedavi edilen ve embolizasyon sonrası şikayetleri kaybolan frenik arter hasarının neden olduğu nadir bir hemoptizi vakasını sunuyoruz.

Anahtar Kelimeler: inferior frenik arter, transkateter arteriyel embolizasyon, akciğer metastazı, masif hemoptizi

ABSTRACT

Cases of inferior phrenic artery hemorrhage and those complicated by massive hemoptysis have been rarely reported. A 17-year-old man presented to our hospital with a chief complaint of hemoptysis weakness and confusion. The patient had history of surgery for synovial sarcoma. Additionally the patient has metastatic right lung mass. CT Angiography examination revealed hemorrhage in the inferior phrenic artery feeding the metastatic lung mass. We present a rare case of right lower phrenic artery rupture, which was successfully treated using TAE and the patient had no complaints after embolization.

Keywords: inferior phrenic artery, transcatheter arterial embolization, lung metastases, massive hemoptysis

INTRODUCTION

Massive hemoptysis may result from various causes, and the frequency with which these causes occur differs greatly between the Western and the non-Western world. The source of massive hemoptysis is usually the bronchial circulation (90% of cases) rather than the pulmonary circulation . In a minority of cases (5%), massive hemoptysis may originate with the aorta (e.g, aortobronchial fistula, ruptured aortic aneurysm) or the systemic arterial supply to the lungs (1). Hemorrhage due to the inferior phrenic artery is a highly rare situation and may cause massive hemothorax and hemoptysis. To the author's knowledge, there are very few case in the literature that bleeding ınferior phrenic arteries (2-7). This case report describes an hemorrhage to the idiopathic right inferior phrenic artery, which was complicated by massive hemothorax and hemoptysis, and treated with transcatheter arterial embolization (TAE).

CASE

A 17-year-old man admitted to our hospital with a chief complaint of hemoptysis, weakness and confusion. On physical examination, the patient was tachypnea and respiratory sounds were decreased in the right lung. The patient had no history of trauma or smoking. In the examinations performed during the patient's admission to the emergency department, the hemoglobin value was 7.4 (gm/dL), the platelet value was 267,000 (mcL), the hematocrit value was 21.8, the creatinine value was 1.69 mg/dL , the ALT value was 158 (U/L), the AST value was 130 (U/L) and the CRP value was 301.5 (gm/L). The patient was operated on 26 November 2019 for a dedifferentiated synovial sarcoma mass located in the left paravertebral at the thoracolumbar level. The patient had a solitary metastatic mass in the lower lobe of the right lung diagnosed at the earlier of 2022. This metastatic mass was detected in the lower lobe of the right lung in positron emission tomography (PET CT) performed in a different

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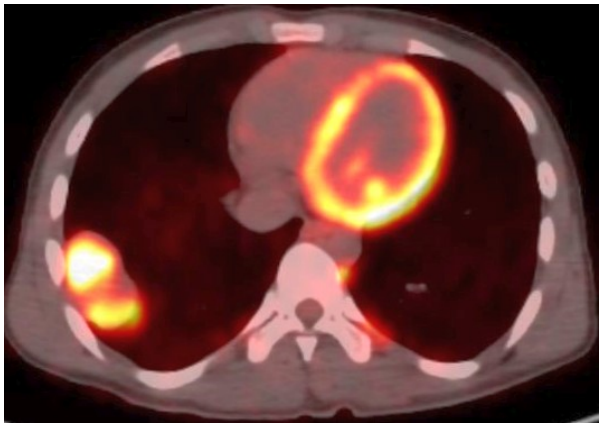
center (Fig 1A). There were no metastatic lesions in either lungs or other systems.

Figure 1A: *PET CT image showing a mass with prominent f-18 fluorodeoxyglucose uptake in the lower lobe of the right lung.*

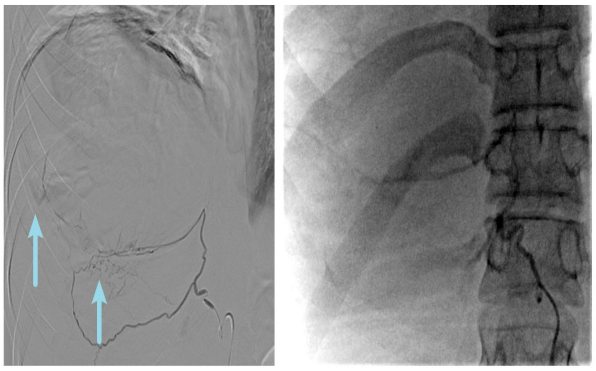


In the pulmonary CT Angiography examination of the patient, active extravasation lower lobe of the right lung and intraparenchymal hematoma in the right hemithorax were observed. In this examination, it was thought that the metastatic mass in the lower lobe of the right lung was bleeding and that its feeder was the right inferior phrenic artery. (Fig 1B and 1C).

Figure 1B and 1C: *CT Angiography image showing massive hemothorax, active extravasation originating inferior phrenic arterial system and tumoral blood supply from the inferior phrenic artery.*

The patient was transferred to the interventional radiology unit for embolization procedure. During the procedure, the patient was intubated together with the anesthesia team. After local asepsis and anesthesia, the right main femoral artery was punctured with a Seldinger needle under US guidance, and a 5F vascular sheath was advanced over a guiding wire. A celiac angiogram was obtained with a cobra catheter. The right phrenic artery was then catheterized. In the angiogram taken, filling and extravasation were detected in the tumoral area. Thereupon, the artery was super selectively catheterized with the microsystem. Embolization was done with Bead Block 300/500 microsphere. Then, since no extravasation was detected, the embolization process was terminated (Fig 1D and 1E). After this process with local asepsis and anesthesia, the right main femoral vein was punctured with a Seldinger needle under US guidance and a 5F vein sheath was advanced. The pulmonary artery was catheterized. Angiograms were obtained from the main pulmonary and right pulmonary artery inferior segments. No active extravasation was detected. Compression was applied by removing the vessel sheaths in the groin. The process took about 4 hours. There were no complications during the procedure. After the procedure, the patient was followed up in the intensive care unit for approximately 1 week. One week after the procedure, the patient underwent right lung lower lobectomy and partial diaphragm repair. Since the operation was performed after the post-embolization procedure, there was no major hemorrhage during the operation. The pathology report of the right lung lower lobectomy material was reported as synovial sarcoma metastasis. A few weeks after the operation, the patient recovered completely and was discharged.

Figure 1D and 1E: *Angiography images showing extravasation in the tumoral area and loss of extraluminal filling after post-embolectomy*



DISCUSSION

In this case report , we present a rare case in which successful transcatheter artery embolization due to massive hemoptysis in a metastatic lung cancer patient with tumoral blood supply from the inferior phrenic artery. The patient with massive hemoptysis had no complaints after embolization.

İnferior phrenic artery hemorrhage feeding the metastatic mass has not been reported, although there are case reports in the literature that caused massive hemoptysis due to blunt trauma, fistula, aneurysm, pseudoaneurysm, and opening of abscess cavitation to the arterial system (2-7). In a series of only 11 cases, the role of the inferior phrenic artery in the interventional treatment of metastatic lung tumor was mentioned (8).

Non-bronchial systemic arteries can be a significant source of massive hemoptysis, especially in patients with pleural involvement caused by an underlying disease. Missing the non-bronchial systemic arteries at initial angiography may result in early recurrent bleeding after successful embolization of the bronchial artery. It should be kept in mind that non-bronchial arterial structures such as intercostal branches of the axillary and subclavian arteries, internal mammarian artery and phrenic artery may cause massive hemoptysis, as in this case.

CONCLUSION

We reported a case in which due to massive hemoptysis in a metastatic lung cancer patient with tumoral blood supply from the inferior phrenic artery was treated using transcatheter arterial embolization and in this case, we considered that Non-bronchial systemic arteries can be a significant source of massive hemoptysis was important.

Etik; Bu yazıda sunulan olgu için sunulan bilgilerin akademik amaçlı kullanımı hakkında detaylı bilgileri de içeren imzalı "Bilgilendirilmiş onam formu" alınmıştır.

Ethics; For the case presented in this article, a signed "informed consent form" was obtained, which includes detailed information about the use of the information presented for academic purposes.

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