

Palpable Lump of the Breast after Bronchial Artery Embolization in Massive Hemoptysis: A Case Report

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Bronchial artery embolization is an effective treatment for hemoptysis with limited complications. Chest pain was the most common complaint, while transverse myelitis from spinal cord ischemia was the most severe complication. To our knowledge, breast complications after bronchial artery embolization have not been reported. We report a case of a 62-year-old woman who underwent bronchial artery embolization and developed a palpable breast lump, which presented as a tubule-like lesion extending into the intercostal space on ultrasonography.

Index words: Breast; Lump; Hemoptysis; Bronchial artery embolization

Introduction

Bronchial artery embolization (BAE) has been used as an effective treatment for hemoptysis. It has a high clinical success rate and low complication rate (1). It has been used as the first-line therapy for hemoptysis and a junction to definitive treatment (1). The development of a palpable breast lump after BAE has not been reported previously. To the best of our knowledge, this was the first reported case of a breast complication after BAE. We describe the imaging findings and review the relevant literature.

Case Report

A 62-year-old woman presented with a palpable lump in her right breast. She had a history of non-tuberculous mycobacterial infection treated with BAE and medication three years ago. The patient presented to our hospital with massive hemoptysis and underwent BAE again. The right subclavian angiogram showed tortuous and engorged arteries originating from the right internal mammary artery and right lateral thoracic artery. Bronchial angiogram showed tortuous and hypertrophic bilateral bronchial arteries that supplied hypervascular lesions in the lungs. Right intercostal angiogram showed tortuous and hypertrophic intercostal arteries that supplied hypervascular lesions in the right upper lobe (Fig. 1a). Embolization was performed with polyvinyl alcohol particles measuring 355–500 μm and 500–710 μm . Hemoptysis was controlled after

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embolization. Immediately after BAE, the patient felt pain in the right breast, right flank, and right back which was aggravated by coughing. The patient also complained of a palpable lump in the upper outer quadrant of the right breast which was soft but hardened over time. Upon physical examination, a 4 cm, round-shaped, hard, and fixed mass was palpated in the right breast. Mammography revealed a heterogeneously dense breast without abnormalities. Ultrasonography (US) showed a

hyperechoic tubule-like lesion extending into the intercostal space with circumscribed margins and internal vascularity (Fig. 1b-d). After BAE, the patient was hospitalized for a month. During that period, breast symptoms were improved without medical intervention. There was no additional follow-up to ensure resolution. The patient did not report breast symptoms or recurrent hemoptysis during the second-year follow-up. No mass was noted on follow-up US examination two years later.

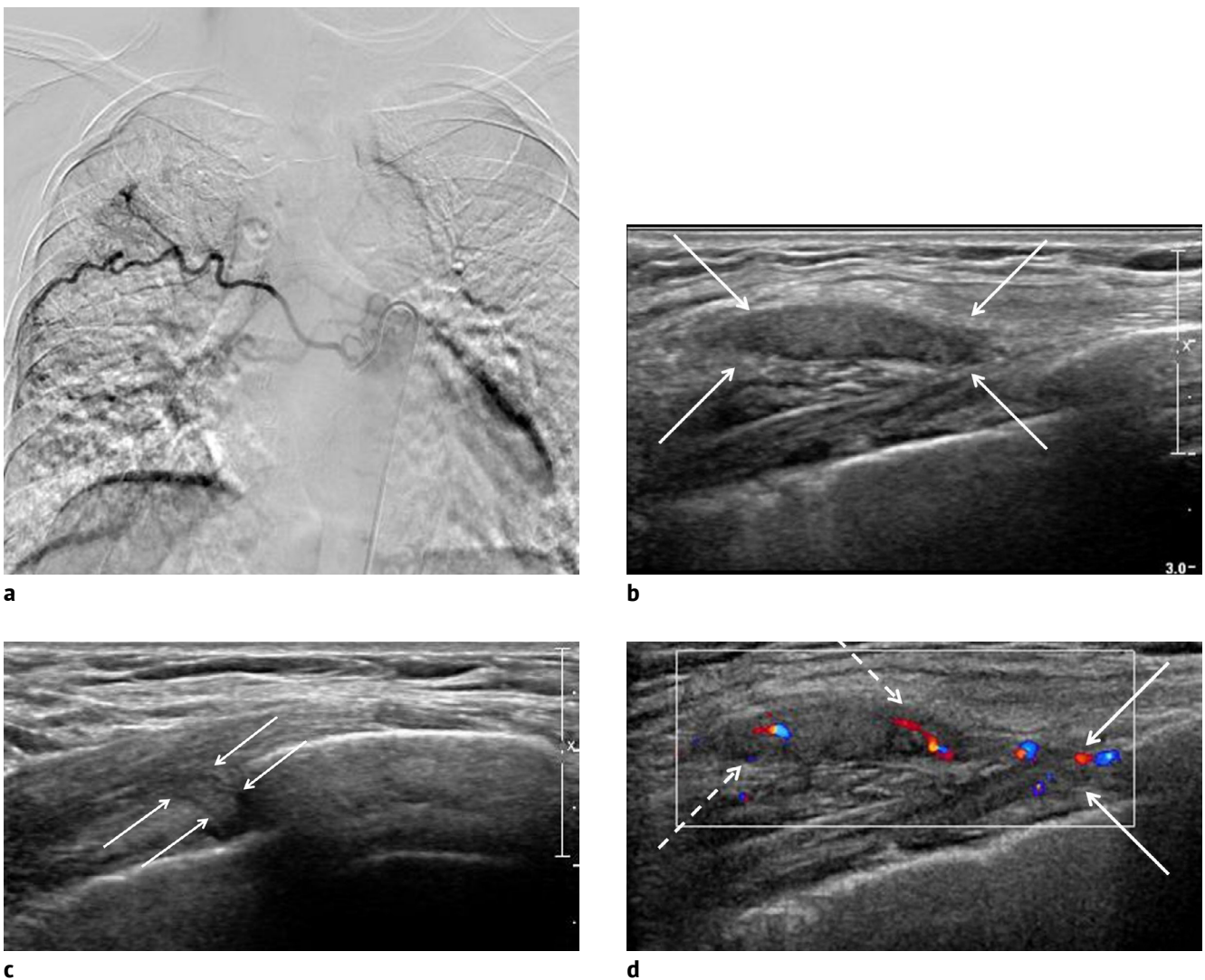


Fig. 1. Imaging findings of palpable lump of the breast after bronchial artery embolization in a 62-year-old woman. **a.** The right intercostal angiogram shows tortuous and hypertrophic intercostal arteries that supply hypervascular lesions in the right upper lobe. **b.** Radial ultrasonography of the right breast shows a hyperechoic tubule-like lesion with circumscribed margins (arrows). **c.** Transverse ultrasonography shows that the lesion is continuing to the intercostal space (arrows). **d.** Color Doppler image shows the internal vascularity of the lesion (dashed arrows) which is continuing to the intercostal space (arrows).

Discussion

Hemoptysis refers to expectoration of blood from the lower respiratory tract. It is graded as mild, moderate, or massive. In massive hemoptysis, the amount of expectorated blood is greater than 300 mL/day or is significant enough to cause life-threatening conditions (2). It accounts for 1.5% of reported cases (1). The initial management of patients with hemoptysis is to protect the airway and stabilize hemodynamic status. Surgery is the definitive treatment (1).

The pulmonary arteries are mainly supplying the lung, whereas the most frequent causative arteries of massive hemoptysis are from the bronchial circulation (3). Remy et al. (4) first reported BAE as a treatment modality for massive hemoptysis in 1973. Since then, it has been demonstrated to be an effective treatment procedure for hemoptysis, with an immediate clinical success rate of up to 99% (2). Recurrence, which occurred in up to 57.5% of cases, depends on the underlying disease (2).

The procedure has limited complications. Panda et al. (2) reported that the median incidence of major complications was 0.1% and ranged from 0% to 6.6%. Chest pain is the most common complication. It was reported in up to 91% of cases, and it is usually self-limited (1). Transverse myelitis due to spinal cord ischemia was the most severe complication, and has occurred in 6.5% of cases (1). There have been no reports on the development of a palpable breast lump after BAE. In the present case, the patient complained of a palpable lump in the upper outer quadrant of the right breast after BAE. The arterial blood supply to the breast is mainly derived from branches of the internal mammary (thoracic) artery, intercostal arteries, and the lateral thoracic artery (5). Among them, the internal mammary artery is the most essential, and its branches supply the medial and central breast parenchyma. Branches of the lateral thoracic artery supply the superolateral breast parenchyma, while branches

of the intercostal arteries run along the pectoralis and serratus anterior muscles, and send perforators across the chest wall musculature to supply the deep central breast parenchyma (6). On US, the palpable lump presented as a hyperechoic tubule-like lesion extending into the intercostal space with circumscribed margins, and internal vascularity. Therefore, the causative arteries of the palpable lump were assumed to be the intercostal arteries. Differential diagnosis is Mondor's disease, which is typically a benign, self-limited disease characterized by thrombophlebitis of the superficial veins. Although the etiology is unclear, some risk factors such as breast surgery, breast biopsy, inflammation, cancer, and trauma have been proposed (7). Patients usually complain a subcutaneous linear cord-like lesion or palpable mass, which is often associated with pain (7, 8). On mammography, it presents as a dilated tubular density (7). On US, it presents as a superficially located, dilated tubular structure with a beaded appearance and no vascularity (7, 8). In the present case, there was no skin lesion, including a subcutaneous cord-like or linear retraction or skin color change. Moreover, it presented as a deeply located hyperechoic tubule-like lesion extending into intercostal space with internal vascularity on US.

In summary, BAE has been widely used as an effective treatment for hemoptysis with low complication rates. Although breast complications, such as development of a palpable lump after BAE, have not been reported previously, they can be suspected in patients complaining of a palpable breast lump after BAE.

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대량 객혈로 기관지동맥색전술 후 발생한 만져지는 유방 종괴: 증례 보고

임윤정 · 정현경 · 신민우 · 김지은

인제대학교 해운대백병원 의과대학 영상의학교실

기관지동맥색전술은 객혈에 효과적인 치료법으로 합병증이 제한적이다. 가장 흔히 호소하는 증상은 흉통이고, 척수 허혈로 인한 횡단성척수염이 가장 심한 합병증이다. 하지만 기관지동맥색전술 후 만져지는 유방 종괴에 대한 보고는 없었다. 이에 저자들은 대량 객혈로 기관지동맥색전술을 시행한 환자에서 발생한 만져지는 유방 종괴 증례를 영상 소견과 함께 보고하고자 한다.

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