Unusual Anatomical Variant of the Left Posterior Basal Segmental Pulmonary Artery: CT Findings

INTRODUCTION

There is considerable variation in the branching patterns of the lobar segmental and subsegmental pulmonary artery branches. Most of the variants are clinically silent (1) but some specific variants, such as the pulmonary artery arising from the systemic artery or the right lower lobe medial basal segmental artery arising from the right main pulmonary artery, can be clinically significant because of the surgical risk of vessel injury (2). In this report, we present the case of unusual anatomical variant of the left posterior basal segmental pulmonary artery, arising from the left main pulmonary artery. This anomaly is rare but easily overlooked during interpretation of CT scans, potentially resulting in serious vessel injury during minimally invasive surgery.

CASE REPORT

A 52-year-old man visited our hospital due to fatigue and he was diagnosed with acute myelogenous leukemia. Before he received chemotherapy, he developed a fever and pneumonia. He underwent a chest computed tomography (CT) scan with 5-mm section thickness using a multidetector CT scanner (Aquilion 64, Toshiba Medical Systems, Tokyo, Japan). The images were acquired within a single breath hold after injection of the contrast medium (Iobrix 350; injection rate, 2.2 mL/s; volume, 100 mL). Three-dimension reconstruction images were acquired with commercial software (Aquarius iNtuition, ver. 4.4.7, Terarecon, Inc., Foster City, CA, USA).

The CT scan revealed consolidation in the left lung, so we considered bacterial pneumonia. Incidentally, the CT identified an unusual anatomical variant of the left posterior basal segmental pulmonary artery (A10) (Fig. 1). A normal left lower lobe posterior basal segmental artery arising from the pars basalis was not noted. Instead, an artery supplying the left posterior basal segmental pulmonary artery arising from the left main pulmonary artery.
The clinical significance of these mediastinal arteries has become important in avoiding surgical risks of vessel injury because of the difficulties associated with the limited field of view.

In this report, we describe the case of an unusual anatomical variant of the left posterior basal segmental pulmonary artery, arising from left pulmonary artery, as its first branch. Thus, it could be called a mediastinal basal artery.

The mediastinal artery was first described in 1973 by Le Brigand (5), as the first branch of the pulmonary artery emerging from the mediastinum. According to the previous literature, the majority of mediastinal arteries supply the lingular segment (6-8), the so-called mediastinal lingular artery.

A mediastinal basal artery is extremely rare, and only a few cases have been reported (6-10). According to previous reports, mediastinal basal arteries have been characterized supplying multiple segments, such as A8 + 9 (6), A5 + 8 + 9 + 10 (7), A7 + 8 + 9 + 10 (8), A8 + 9 (9), and A9 + 10 (10). However, to our knowledge, there is no previous report of a mediastinal basal artery supplying only the posterior basal segment (A10).

The clinical significance of these mediastinal arteries has in-
Increased with development of minimally invasive surgery. Yamada et al. (2) noted a surgical risk to the right medial basal segmental pulmonary artery (A7) while dividing the right minor fissure during VATS segmentectomy. They detected this variation before surgery on CT; thus they could avoid vessel injury.

We describe a case of a mediastinal basal artery, supplying posterior basal segment of left lower lobe. It is important for the radiologist to be familiar with the CT appearance of various pulmonary artery anomalies to avoid vascular injury during minimally invasive surgery.

REFERENCES


폐의 좌하엽 후기저분절 동맥의 드문 해부학적 변이: 단층촬영 소견

김영선1·강미진1·정명자1·김재형1·이지혜1·이한비1·배경은1·강태경2

폐의 최소침습적 수술을 시행할 때 혈관의 손상을 피하기 위해서는 흉부외과 의사가 폐혈관의 정확한 해부학을 아는 것이 매우 중요하다. 본 증례에서는 좌하엽 후기저분절 동맥이 좌폐동맥에서 직접 분지하는 드문 해부학적 변이에 대해 고 참고자 한다. 이러한 변이는 드물지만 단층촬영 판독시에 쉽게 간과될 수 있으며 폐의 최소침습적 수술 전에 이러한 변 이를 알지 못한다면 심각한 혈관 손상을 입을 수 있을 것이다.

인제대학교 의과대학 상계백병원 1영상의학과, 2응급의학과