**Case
Report**

Extralobar Pulmonary Sequestration in a 55-Year-Old Man

Hai-yang Xuan, MD, Kai-hu Shi, MD, PhD, Wen-hui Gong, MD, and Jun-xu Wu, MD

Pulmonary sequestration is a rare congenital lung malformation that more commonly occurs in the left lung, mainly near the lower mediastinum. It is rarely observed in patients with extralobar sequestration in adulthood. We report the case of a 55-year-old man with recurrent fever and cough lasting for about 1 month, who was admitted to our hospital. His past history was unremarkable. The final diagnosis of extralobar sequestration was dependent on three-dimensional computed tomography angiography (3D CTA), which showed an abnormal blood supply vessel to the consolidation from the aortic arch. The patient underwent a left pulmonary sequestration resection, and the pathological examination also verified the diagnosis postoperatively. 3D CTA images can provide an aberrant vessel anatomy map for the surgeon and play a decisive role in the detection of pulmonary sequestration.

Keywords: pulmonary sequestration, three-dimensional computed tomography angiography

Introduction

Pulmonary sequestration is a rare congenital lung malformation, and patients usually present with fever, cough, sputum, hemoptysis, or chest pain.¹⁾ Because the symptoms are not typical, pulmonary sequestration is often misdiagnosed as bronchiectasis, congenital emphysema, hemothorax, and even lung cancer.^{2,3)} Routine chest X-ray and computed tomography (CT) scan have difficulty showing abnormal blood vessels clearly. Three-dimensional computed tomographic angiography (3D CTA) can depict an aberrant blood supply from systemic circulation to the consolidation accurately and intuitively, thereby greatly improving the diagnosis rate preoperatively and reducing the surgical risk.⁴⁾ We report a case of pulmonary sequestration in a 55-year-old male,

who received the definite diagnosis through 3D CTA, preoperatively.

Case Report

A 55-year-old male with recurrent fever and cough lasting for about 1 month was referred to our department for imaging. His past history was unremarkable. Chest CT showed an increased density shadow near the left lower mediastinum (**Fig. 1A**). Pulmonary sequestration was the final diagnosis through 3D CTA, which showed the abnormal blood supply vessel from the aortic arch (**Fig. 1B and 1C**). The patient underwent a left pulmonary sequestration resection. During the operation, this aberrant blood vessel, a diameter of 8 mm, was confirmed. The mass, which was separated from the lung tissue by a separate lining of pleura, looked like atelectasis and no carbon deposited (**Fig. 2**). Pathological examination also verified the diagnosis postoperatively.

Discussion

There are two salient features in pulmonary sequestration, 1) supply by a systemic artery and 2) no pulmonary function because of a lack of communication with the

Department of Cardiovascular Surgery, the Second Hospital of Anhui Medical University, Anhui, China

Received: April 5, 2012; Accepted: December 18, 2012

Corresponding author: Kai-hu Shi, MD, PhD. Department of Cardiovascular Surgery, the Second Hospital of Anhui Medical University, 678 Furong Road, Hefei, Anhui, 230061 China
Email: shikaihu@gmail.com

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Fig. 1 Chest CT scan showing the increased density shadow (arrow) near the left lower mediastinal (A). 3D CTA showing an abnormal artery entering the consolidation from the aortic arch on the coronal plane (B, arrow) and on a sagittal plane (C, arrow).

Fig. 2 Intraoperative image showing the pulmonary sequestration (black arrow) separated from the lung tissue by a separate lining of pleura and no carbon deposited. The abnormal artery arising from the aortic arch (white arrow) was confirmed.

normal bronchial tree.⁵⁾ Pulmonary sequestration more commonly occurs in the left lung, mainly near the lower mediastinum, which can be divided into intralobar and extralobar. Extralobar, which is separated from the lung tissue by its own visceral pleura, is about three times larger than intralobar, which is located within the normal lung sharing common viscera pleura.⁶⁾ About 50%–60% patients are adolescents, most of which have recurrent infections and need treatment.⁷⁾ It is rarely found in patients with extralobar sequestration older than 50. The reason may be that the patient did not pay enough attention due

to the initial symptoms of pulmonary sequestration, which were not typical. Until now, he had received the 3D CTA examination, then the final diagnosis.

It is more difficult for the diagnosis of pulmonary sequestration. The key of the diagnosis is to identify anomalous arteries and veins, which is crucial for surgery.⁴⁾ Conventionally, digital subtraction angiography (DSA) was considered the gold standard for diagnosis of pulmonary sequestration, however, it was difficult to perform in a wide range because of disadvantages such as invasive, higher cost etc.⁸⁾ Now 3D CTA plays a decisive role in the diagnosis of pulmonary sequestration, from which can be provided a more accurate spatial resolution in depicting the vessel anatomies, such as origin, shape and branch of vessels, which contributes to surgery. For those lung diseases that are difficult to diagnose, 3D CTA should be carried out timely for early detection, early diagnosis and early treatment.

Disclosure Statement

All authors of the manuscript had agreed to its submission and had no conflicts of interest.

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