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Case Report

Isolated unilateral proximal interruption of the pulmonary artery: findings of high-resolution computed tomography and three-dimensional volume rendering imaging of the pleura

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ABSTRACT

A unilateral proximal interruption of the pulmonary artery is a rare entity that is commonly associated with other congenital cardiovascular anomalies. However, less frequently, this condition may occur as an isolated finding, and some patients are completely asymptomatic. We report 2 cases of asymptomatic patients who had an isolated unilateral proximal interruption of the pulmonary artery. Herein, the radiological imaging findings are described with an emphasis on interlobular septal thickening of the affected lung demonstrated with high-resolution computed tomography. Three-dimensional volume rendering imaging clearly demonstrated reticular opacities on the surface of the affected side of the pleura.

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Introduction

A unilateral proximal interruption of the pulmonary artery is an uncommon developmental anomaly. When it occurs in infancy, it is commonly associated with congenital cardiovascular defects. The most common associations include

Tetralogy of Fallot and septal defects [1]. An interruption of a main pulmonary artery tends to involve the side contralateral to the aortic arch [1]. It is more commonly left-sided if it is associated with a congenital heart disease, but tends to occur on the right if it is an isolated abnormality. If it is an isolated phenomenon, patients are often asymptomatic for several

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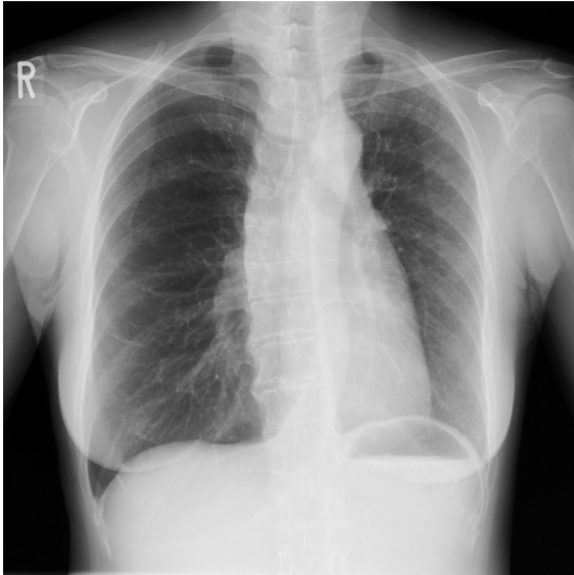


Fig. 1 – Chest radiograph posteroanterior (PA) view from case 1 shows a small hilum on the left. The anterior junction line is displaced to the left, and the reticulation is visible on the periphery of the left lung.



Fig. 2 – A three-dimensional (3D) volume rendering image from case 1 at the pulmonary arterial phase clearly demonstrates the absence of the proximal portion of the left pulmonary artery.

decades and present as adults with either an incidental recognition on an abnormal chest radiograph or hemoptysis [2]. We present 2 cases of proximal interruption of the pulmonary artery. Herein, the radiological imaging findings are described; moreover, interlobular septal thickening of the affected peripheral lung was demonstrated with high-resolution computed tomography (HRCT). Three-dimensional (3D) volume rendering imaging clearly demonstrated reticular opacities on the surface of the affected side of the pleura.

Case report 1

A 67-year-old woman with no significant past medical history was referred for evaluation of an abnormal chest radiograph obtained during an episode of an upper respiratory tract infection.

A chest radiograph (Fig. 1) demonstrated a small-volume left hemithorax and a small left hilum. The contralateral lung had a large volume and was herniated into the smaller hemithorax. Reticulation within the peripheral aspect of the left lung was observed.

Dynamic contrast-enhanced computed tomography (CT) demonstrated complete absence of the proximal portion of the left pulmonary artery at the pulmonary arterial phase. A 3D volume rendering image of the pulmonary arterial phase (Fig. 2) demonstrated proximal interruption of the left pulmonary artery. Enhanced CT indicated dilated, serpiginous abnormal arteries around the left hilum at the systemic arterial phase. Furthermore, we believed that the blood supply to the left pulmonary vasculature was provided by the systemic vessels, dilated bronchial arteries, left intrathoracic arteries, and left inferior phrenic arteries. No costal arteries appeared to be dilated. The distance between the main

pulmonary artery and the peripheral left pulmonary artery was only approximately 1 mm. A 3D volume rendering image of the arterial phase (Fig. 3) showed the interrupted proximal portion of the left pulmonary artery, dilated collateral arteries, and peripheral left pulmonary artery.

HRCT on the lung window setting (Figs 4A and B) demonstrated smooth interlobular septal thickening in addition to peripheral, linear, and branching structures perpendicular to



Fig. 3 – A 3D volume rendering image from case 1 at the arterial phase reveals an interruption of the proximal portion of the left pulmonary artery, dilated abnormal arteries around left hilum, and the distal portion of the left pulmonary artery.

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