

## Extreme pulmonary artery aneurysm with thrombosis

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### Abstract

A 52-year-old male patient had a right humerus fracture 6 weeks before seeking surgical treatment. On transthoracic echocardiography, the pulmonary artery aneurysm was measured, at its widest point, to be approximately 9.07 cm in diameter with a thrombus inside the main pulmonary artery. Thoracic computerized tomography confirmed the presence of an aneurysm in the main pulmonary artery of approximately 9.05 cm diameter with a thrombus involving the right main pulmonary artery.

**Keywords:** Aneurysm, Thrombosis

### Introduction

The main pulmonary artery aneurysm is considered a rare entity [1]. Pressure on bronchial tree, pulmonary artery dissection, and rupture and thrombus formation are the potential complications of pulmonary artery aneurysms [2]. Slowdown of blood flow in the aneurysm and endothelial dysfunction are considered to predispose the patient to thrombus formation. Our patient presented with shortness of breath for a period of six weeks when undertaking moderate physical activity. He was later diagnosed, surprisingly, with a pulmonary artery aneurysm with thrombosis.

### Case

A 52-year-old male patient had a right humerus fracture 6 weeks before seeking surgical treatment. The patient had surgery treatment with general anesthesia. He was later referred to the cardiology department for evaluation of his dyspnea. The patient complained of long-standing breathlessness when undertaking physical activity. The patient's history revealed a smoking habit of a packet of cigarettes per day over a period of 35 years. Coarse rhonchi were present in both lung fields on physical examination. The patient had sinus rhythm on ECG with intermittent RBBB, LPHB, pathologic Q waves on inferior leads with a few atrial extra beats. Chest X-ray was taken and evaluated (Fig. 1).

On transthoracic echocardiography, the pulmonary artery aneurysm was measured, at its

widest point, to be approximately 90.7 mm in diameter with a thrombus inside the main pulmonary artery (Fig 2a, 2b, Supp. Material, video 1a, 1b).

Thoracic computerized tomography confirmed the presence of an aneurysm in the main pulmonary artery of approximately 92.35 mm diameter with a thrombus involving the right main pulmonary artery (Fig. 3). Irregular pulmonary arteries with vessel wall changes suggested a chronic thromboembolic disease. On both branches of the main pulmonary artery, widespread obliteration of the pulmonary vascular bed, related most likely to pulmonary hypertension, was observed. The patient was referred to the cardiovascular surgery unit for further evaluation and treatment. One year later the patient was referred to our department for evaluation. An echocardiography revealed that the diameter of the aneurysm in the pulmonary artery was 92 mm. The patient is now followed by the pneumology department and treated with low molecular weight heparine.

### Discussion

A pulmonary artery diameter exceeding 40 mm is defined as a pulmonary artery aneurysm (PAA). The aneurysms in the main pulmonary artery and its two branches are classified as PAA [2]. In autopsy studies the PAA frequency was found to be 1:14000 [1].

**Received:** 13 Oct. 2014, **Revised** 15 Oct. 2014, **Accepted** 20 Oct. 2014, **Available Online** 25 Oct. 2014

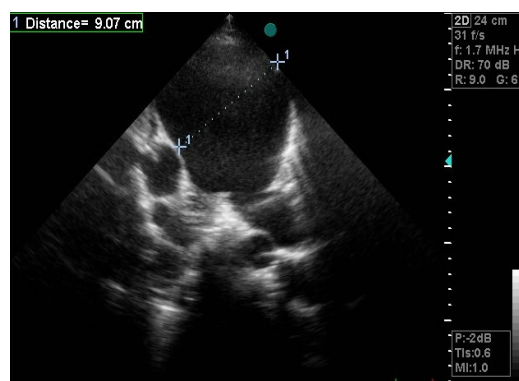
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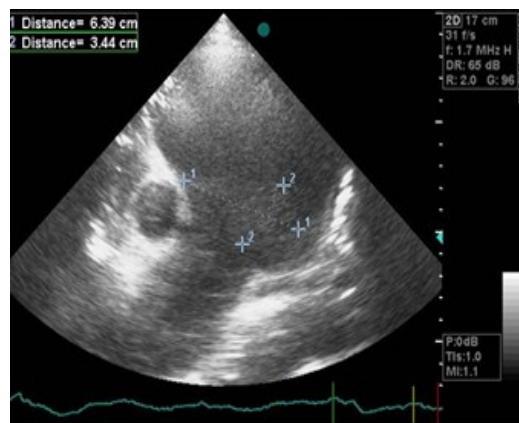
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**Figure 1:** Chest x-ray showing pulmonary artery aneurysm



**Figure 2a:** Left parasternal short axis view



**Figure 2b:** Huge aneurysm of pulmonary artery with a thrombus inside the main pulmonary artery seen by 2D echocardiography

Pulmonary hypertension related to cardiac and pulmonary pathologies, atherosclerosis, various infections (syphilis, bacterial endocarditis, tuberculosis), Marfan syndrome and other connective tissue diseases, cystic medial degeneration, trauma, Behcet's disease and Hughes-Stovin syndrome are the etiologic factors for the development of PAA [3, 4, 5].

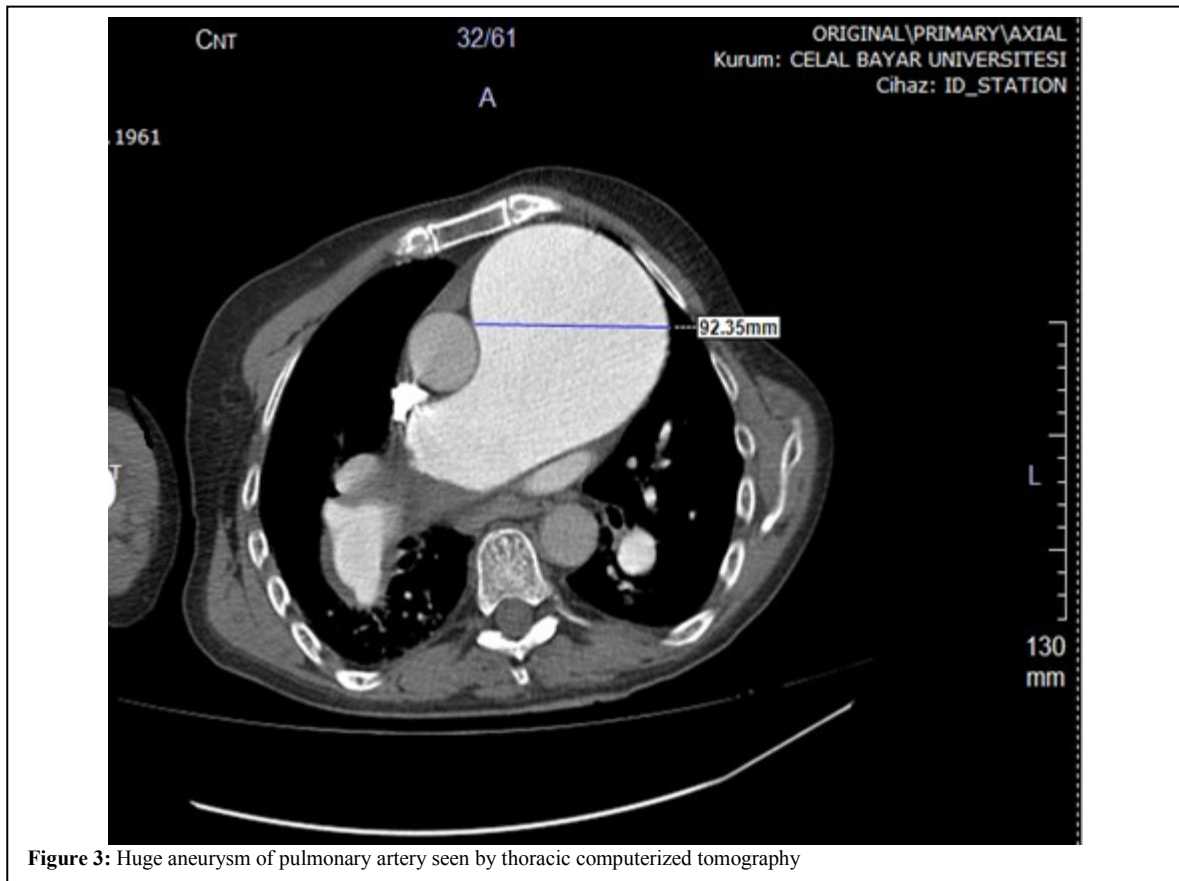
The most important etiologic factor is considered to be pulmonary hypertension [6]. In the

majority of patients the pulmonary artery aneurysm is asymptomatic [7]. The symptomatic patients experience shortness of breath with moderate physical activity. Others may exhibit non-specific complaints such as fever, cough and hemoptysis [8]. Computed Tomography (CT) can be useful in the diagnosis and follow-up of the pulmonary artery aneurysms as it is a noninvasive, fast and efficient method [9]. There is no consensus on the treatment of pulmonary artery aneurysms.

Veldtman et al suggested that in low pressure aneurysms, the timing for surgery depends on the size and function of the right ventricle (related to pulmonary stenosis or insufficiency) rather than the size of the aneurysm [1]. Considering the size of the aneurysm and the possibility of anticoagulation, the patient was referred to pneumonology, rheumatology and cardiovascular surgery for further evaluation and treatment.

**Financial Support:** This research received no specific grant from any funding agency, commercial or not-for-profit sectors

**Conflict of Interest:** The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.



**Figure 3:** Huge aneurysm of pulmonary artery seen by thoracic computerized tomography

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