We describe a 45-year-old man with thromboangiitis obliterans. He had a large immobile wall-adherent thrombus located in the main pulmonary artery, which was detected by transthoracic echocardiography. The pulmonary arterial involvement in this patient may suggest that thromboangiitis obliterans is a generalized vascular disease. We conclude that pulmonary artery should be thoroughly examined for thrombi in thromboangiitis obliterans patients who present with signs and symptoms of right heart failure. Transthoracic echocardiography should be the initial mode of examination in these patients.

Key Words: echocardiography; pulmonary; embolism; thromboangiitis obliterans; thrombus.

Introduction

Pulmonary embolism has a high mortality rate if not diagnosed early, and early diagnosis is usually difficult. Although transoesophageal echocardiography is superior to transthoracic echocardiography in the diagnosis of pulmonary embolism, transthoracic echocardiography should not be omitted in these patients. In unstable patients with hypoxia, transthoracic echocardiography can prove to be very useful and has the advantage of being very safe and easy.

In patients with thromboangiitis obliterans, thrombus in pulmonary artery is often regarded as an embolus arising from the lower extremities. Here we present a case in which pulmonary artery involvement was possibly primary due to thromboangiitis obliterans.

Case Report

A 45-year-old man was referred to the cardiology department with signs and symptoms of right heart failure. He has been symptomatic for 1 year. He had been a heavy smoker for the last 26 years and had previously been diagnosed with thromboangiitis obliterans. He had undergone lumbar sympathectomy 15 years ago. Physical examination revealed ascites, hepatomegaly, pansystolic murmur in the tricuspid area, and neck vein distention. His blood pressure was 100/70 mmHg. Electrocardiography showed right axis deviation and right bundle branch block pattern. Arterial blood gas analysis showed PO2 and PCO2 as 76 and 48 mmHg, respectively. Transthoracic echocardiography showed hypokinetic right ventricle with markedly dilated right ventricle, right atrium and inferior vena cava. There was also diastolic flattening of the interventricular septum indicating right ventricular overload, fourth degree tricuspid regurgitation and third degree pulmonary insufficiency. The peak systolic gradient between right ventricle and right atrium was measured as 29 mmHg by continuous-wave Doppler over the tricuspid regurgitation jet. At first, these findings were thought to be due to chronic lung disease. However, parasternal short-axis view at the level of the pulmonary valve and main pulmonary artery revealed an immobile, wall-adherent, oval-shaped thrombus, close to the bifurcation of the main pulmonary artery (Fig. 1).
and thrombus may develop in the vascular lumen in this medium-sized arteries and veins in distal extremities, occlusive vascular disorder that involves small and diography in pulmonary embolism. shows the diagnostic potential of transthoracic echocardiography to show the thrombus directly. Instead, it generally shows indirect signs of pulmonary embolism, which are due to right ventricular overload and pulmonary hypertension[1,2]. Trans thoracic echocardiography cannot always visualize the entire pulmonary trunk, its bifurcation and the two main branches with ease. However, in patients with dilated pulmonary arteries good quality images can be obtained, the pulmonary trunk with its two main branches can be visualized easily and treatment can be started without delay if thrombus is detected in this area. This report shows the diagnostic potential of transthoracic echocardiography in pulmonary embolism.

Thromboangiitis obliterans is an inflammatory occlusive vascular disorder that involves small and medium-sized arteries and veins in distal extremities, and thrombus may develop in the vascular lumen in this disease[3]. Multiple organ involvement and pulmonary embolism in thromboangiitis obliterans are rarely reported and it is suggested that this disease may be a generalized vascular disorder[4-5]. Rather than an acute onset suggestive of acute pulmonary embolism, the presence of right heart failure symptoms for 1 year in our patient suggests that the thrombus could have been in the main pulmonary artery for a long time.

Chronic thromboembolic pulmonary hypertension may be responsible for right ventricular overload in this patient. However, thrombus in lower extremity veins may not be the only source of chronic thromboembolism. If the pulmonary artery is primarily involved in this patient, there is still a possibility that smaller thrombi responsible for chronic thromboembolic pulmonary hypertension may have originated from the larger thrombus in the main pulmonary artery.

Right atrial thrombi that develop in situ are usually immobile and wall-adherent, with a broad-based attachment. On the other hand, thromboemboli originating from the peripheral veins are usually mobile, irregular and serpentine masses that float freely in the right atrium. Similarly, the oval shape of the pulmonary artery thrombus in our patient may suggest that it formed primarily in the main pulmonary artery.

Differential diagnosis includes tumour of pulmonary artery. However, its smooth surface and the presence of symptoms of right heart failure for 1 year makes the diagnosis of pulmonary artery tumour less likely.

Although the possibility of embolic origin exists, the clinical history and findings, slow development of right heart failure symptoms and observation of an oval-shaped, immobile, wall-adherent thrombus may suggest thromboangiitis obliterans as the primary cause of pulmonary artery thrombosis. We conclude that pulmonary artery should be thoroughly examined for thrombi in thromboangiitis obliterans patients with signs and symptoms of right heart failure. Transthoracic echocardiography should be the initial mode of examination in these patients, especially in those with severe hypoxia who require ventilatory support before transoesophageal echocardiography can be instituted.

**References**


