

DIAGNOSIS OF ACUTE PULMONARY THROMBOEMBOLISM BY CT ANGIOGRAPHY

DIAGNÓSTICO DE UN TROMBOEMBOLISMO PULMONAR AGUDO POR ANGIOTC

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ABSTRACT

Acute pulmonary thromboembolism have increased morbidity and mortality in the elderly, but it can also occur in young adults, which is why an accurate diagnosis is very important in this age group. This article presents the case of a 37-year-old man, who comes to the emergency room for chest pain without electrocardiographic abnormalities and dilatation of the right chambers on echocardiography. CT angiography was performed and it showed a dilated pulmonary trunk, where there was a hypodense image occupying its distal portion, in relation to acute pulmonary thromboembolism. The patient responded favorably to treatment. Through this study, the importance of CT angiography with dual-source CT scanner for evaluation of acute

chest pain, in patients with no electrocardiographic manifestations or enzymatic myocardial infarction is demonstrated.

Key words: Pulmonary embolism, Thromboembolism, Tomography

RESUMEN

El tromboembolismo pulmonar agudo tiene mayor morbilidad y mortalidad en los ancianos, pero puede presentarse en adultos jóvenes; por eso el diagnóstico certero es muy importante en este grupo etario. En este artículo se presenta el caso de un hombre de 37 años de edad, que acude al cuerpo de guardia por dolor precordial, sin alteraciones electrocardiográficas y dilatación de las cavidades derechas en el ecocardiograma. Se realizó AngioTC y se observó una dilatación del tronco de la arteria pulmonar, donde había una imagen hipodensa que ocupaba su porción distal, en relación con tromboembolismo pulmonar agudo. El paciente evolucionó favorablemente con el tratamiento. Mediante este estudio, se evidencia la importancia del AngioTC con tomógrafo de doble fuente, para la eva-

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luación del dolor torácico agudo, en el paciente que no tiene manifestaciones electrocardiográficas, ni enzimáticas de infarto agudo de miocardio.

INTRODUCTION

Although pulmonary thromboembolism (PTE) has higher acute morbidity and mortality in the elderly^{1,2}, it can occur in young adults, that is why an accurate diagnosis is very important in this age group^{3,4}.

This disease is a relatively common cardiovascular emergency. Occlusion of the pulmonary arterial bed can produce acute right ventricular failure, which is potentially reversible, but compromises the patient's life.

Multislice computed tomography provides images useful for diagnosis, so today it is considered the method of choice because of its high sensitivity and specificity, and how quickly it can be done^{1,5,6}.

CASE REPORT

A 37-year-old man with a history of health was admitted to the emergency room for chest pain, electrocardiogram presented no changes and echocardiogram showed dilatation of right chambers. The patient's hemodynamic status worsened and a CT angiography was performed. The examination was conducted in a TCDF equipment (Somatom Definition, Siemens Medical Solutions, Forchheim, Germany) with a standard protocol after intravenous administration of 120 ml of iodinated contrast (Ultravist 370 ml, 6 ml / sec), through antecubital vein. For this purpose, the bolus tracking method was used with the aorta as a region of interest, a trigger threshold of 100 Hounsfield units and eight seconds delay for starting the scan. The image acquisition was synchronized with the ECG recording. All images were sent to a workstation equipped with postprocessing tools. In the study, a dilated pulmonary artery trunk was observed, where there was a hypodense image occupying its distal portion, with growth in inferior direction to both branches of the pulmonary artery, in relation to acute pulmonary embolism (Figures). Through this study, the importance of CT angiography with dual-source CT scanner for evaluation of acute chest pain, in patients with no electrocardiographic manifestations or enzymatic myocardial infarction was demonstrated.

COMMENT

PTE has no specific clinical presentation, so diagnosis can be a challenge for the attending physician. However, early diagnosis is critical because early treatment

Palabras clave: Embolia pulmonar, Tromboembolia, Tomografía

aimed at restoring pulmonary arterial flow is highly effective¹⁻³.



Figure 1. Multiplanar reconstruction, coronal plane. The arrow indicates the thrombus in the pulmonary artery trunk.

The risk of death associated with acute PTE varies from 7 to 11%², and may reach 25% in untreated PTE¹. Its prevalence in hospitalized patients in the United States, according to data collected between 1979 and 1999, was 0.4%², the annual incidence in this country is estimated at 600,000 cases² and in Spain, nearly 60,000, in the same period of time¹.

Moreno-Martinez et al.¹ suggest that in up to 40-50% of cases PTE is asymptomatic and assert that in their clinical experience, up to 60-70% of patients with autopsy die "with" PTE and about 40% die "of" PTE. Prolonged bed rest, presence of chronic venous insufficiency, malignancies, pregnancy or oral contra-

ceptive use, among other factors, suggest its diagnosis^{1,2,7,8}.



Figure 2. Curved multiplanar reconstruction. The arrows indicate the thrombus in the trunk of the pulmonary artery and its branches.

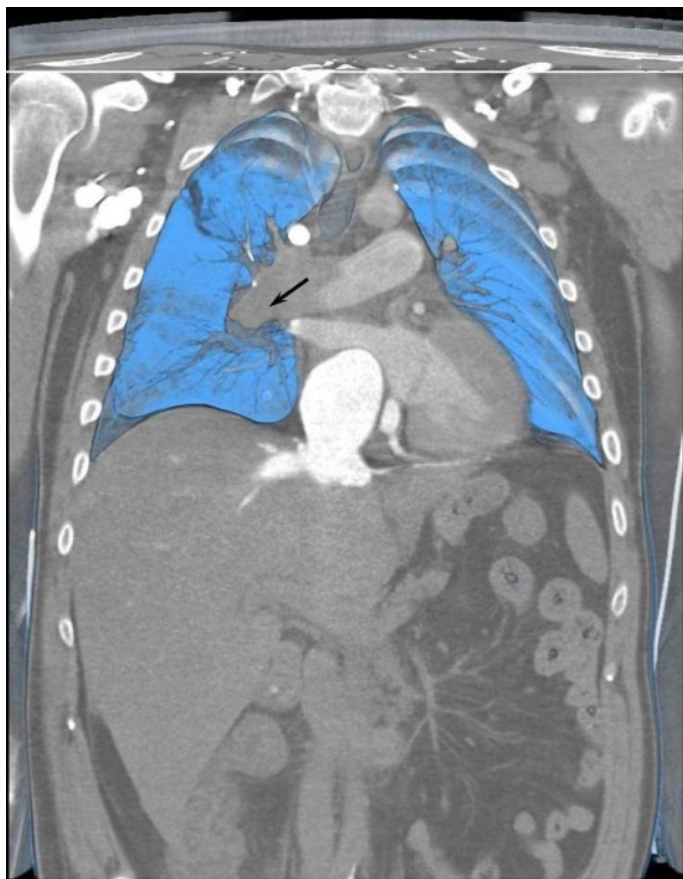


Figure 3. Volumetric reconstruction. The arrow indicates the thrombus in the pulmonary artery trunk.

It is more common in males and in patients undergoing surgery^{1,2,7,8}. However, in this patient risk factors were unknown and the treatment of choice was fibrinolysis with Cuban recombinant streptokinase, as suggested by performance guidelines² and other international studies⁹.

The tomography confirmed the suspected diagnosis and the proper treatment could be early established.

With the recent improvements in the technology available, the value of CT angiography when making decisions, when a PTE is suspected has changed. Since the introduction of tomography with multiple detectors with high spatial and temporal resolution and high quality of arterial opacification, CT angiography has become the method of choice for displaying the pulmonary vasculature in clinical practice, when PTE is suspected^{2,10}.

Anticoagulation, thrombolysis and surgical thrombectomy are the mainstays of treatment, but fragmentation and transluminal percutaneous extraction of the thrombus can also be used^{1,2,11}.

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