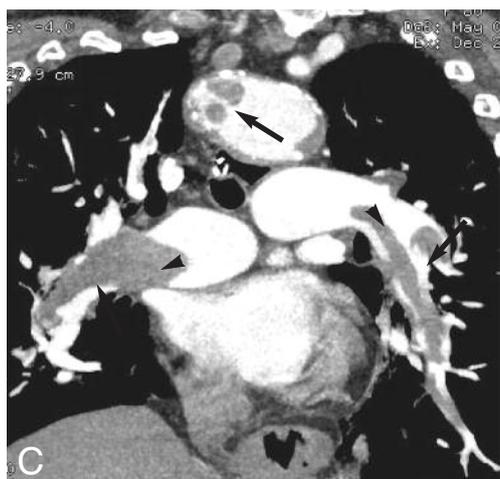
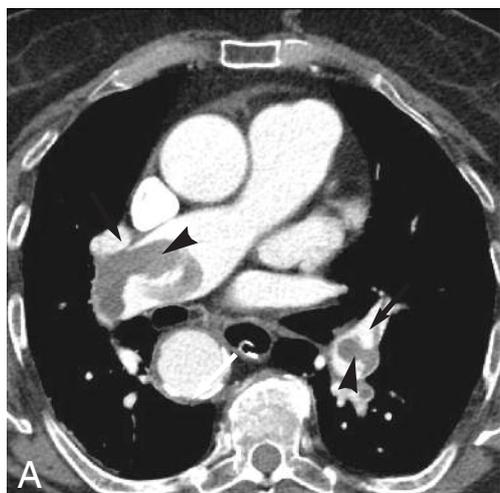


## IMAGES IN CLINICAL RADIOLOGY



### *Massive fatal simultaneous pulmonary and paradoxical embolism: MDCT diagnosis*

B. Coulier

An 81-year-old female was admitted to the emergency room with complaints of nausea, vomiting, vertigo and episodes of paresia of her right inferior face, right arm and both legs. There was neither confusion nor aphasia.

Unenhanced CT of brain (not illustrated) demonstrated multiple hypodensities evocating multiple embolic infarctions.

Dyspnea was also present at admission and laboratory tests revealed D-Dimers elevation.

Thoracic angio-MDCT was immediately performed (A, B, C) and demonstrated bilateral massive pulmonary embolism with large serpiginous clots in both main pulmonary arteries (black arrowheads). The patient had also an aberrant right aortic arch in which a massive packet of fresh serpiginous clots was floating (black arrow). The fixation of this floating packet was assured by the deep impaction of a long portion of clot in the proximal third of the right subclavian artery (white arrowhead).

The diagnosis of massive pulmonary embolism with massive synchronous paradoxical embolism was made and the patient was immediately admitted in the intensive care unit to manage intravenous fibrinolysis. Unfortunately, the patient died a few hours later from cardiac arrest.

#### *Comment*

Paradoxical embolism is defined as a systemic arterial embolism requiring the passage of a venous thrombus into the arterial circulatory system through a right-to-left shunt.

It is a relatively rare condition accounting for nearly 2% of systemic arterial emboli. Nevertheless it can lead to severe prognosis, with a reported rate of mortality in more than 20% of cases.

This condition can be related to an abnormal intracardiac communication. The most common cardiac defect associated with paradoxical embolism is the patent foramen ovale (PFO) which reaches prevalence from 27 to 35% in the normal population.

Under physiological conditions, PFO only determines a small amount of left-to-right shunt without any hemodynamic significant changes. In case of increased right atrial pressure the inversion of shunt from right-to-left can occur and lead to paradoxical embolism.

The transient right atrial hypertension due to acute pulmonary embolism can be the presumed mechanism in many cases. It has been estimated that 67% of cases of paradoxical embolism are associated with pulmonary embolism.

Usual sites of paradoxical embolism are the inferior limbs (49%), the brain (37%) and more rarely coronary, renal or splanchnic arteries and retinal artery.

The immediate recognition of paradoxical embolism is of primordial importance and treatment mainly consists of thrombectomy or thrombolysis. With concomitant pulmonary embolism a permanent IVC filter and anticoagulation are often needed.