

## A young woman with a left thoracic pain and normal chest radiograph

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### ABSTRACT

A young Brazilian woman was admitted to the Emergency Division for localized pain in the left hemithorax and dyspnea worsened by movement for three months, without cough or fever. She was previously healthy and denied allergy, use of alcohol beverages, tobacco or illicit drugs; and was taking oral contraceptive - ethinylestradiol 0.02 mg/drospirenone 3 mg for nine months. Her physical examination and the findings of electrocardiogram, transthoracic echocardiogram, and echo-Doppler of lower extremities were unremarkable. Routine blood determinations were within normal ranges, except for the levels of D-dimers - 304 ng/mL (normal: <500 ng/mL). Respiratory function tests were not conclusive, and complementary imaging studies were done. After diagnosis and clinical management, she was discharged from hospital without symptoms.

### Case Report

A 16-year-old Brazilian female presented to the Emergency Division with an intense pain felt at the lower third of the left hemithorax associated with dyspnea, but there was no cough or fever. She complained of intermittent mild chest pain, which first appeared three months before, worsened upon movement, and had no irradiation. She was previously healthy and denied al-

lergy, use of alcohol beverages, tobacco or illicit drugs, as well as respiratory infections. She was using oral contraceptive (OC), ethinylestradiol 0.02 mg/drospirenone, 3 mg for nine months. Physical examination showed a female with body mass index: 19 kg/m<sup>2</sup>, temperature: 36.2°C, blood pressure: 110/70 mmHg, heart rate: 90 bpm, respiratory rate: 20 ipm, and SpO<sub>2</sub>: 94%. The auscultation of cardiovascular and respiratory systems revealed normal data, and the results of laboratory tests, including immune disorders, coagulation and common thrombophilic conditions were unremarkable. Worth of note, the level of D-dimers was 304 ng/mL (normal: <500 ng/mL). The electrocardiogram as well as the transthoracic echocardiograph did not reveal abnormalities. Images of the echo-Doppler of lower extremities and chest radiograph (Figure 1) were normal. Respiratory function tests showed a mild obstructive ventilatory disturbance, with response to administration of bronchodilators. Then, complementary imaging studies were done to better clear the etiology of her chest pain. Clinical management of the patient included parenteral and oral medications. She was discharged from hospital on Day 9 of admission with improvement of symptoms. Instructions were done about contraception and need of follow-up at Division of Pneumology. The exams of control done about 30 days after the hospital discharge revealed SpO<sub>2</sub>: 98%, and D-dimers: 76 ng/mL. Currently, she is in a good state of health and normally performing all activities of daily living.

What is your diagnosis?

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### Discussion and Conclusions

Pulmonary thromboembolism (PTE) is usually secondary to an acute obstruction of pulmonary arte-

rial vessels by thrombi fragments from deep venous thrombosis (DVT) of the lower limbs. These emboli can pass through the bloodstream to the right heart and may lodge in the main pulmonary trunk or in some of its branches, causing variable degrees of blood flow obstruction. Acute impairment of pulmonary arterial circulation cause cardiovascular and respiratory effects, with severity depending upon the thrombus size and previous state of the pulmonary arterial tree. Moreover, the general health condition of affected people can play a main role in this setting. Clinical features of PTE are quite nonspecific and vary from mild symptoms to sudden death. Diagnosis suspicion depends on the presence of general risk factors, thrombophilic disorders, classical clinic symptoms and signs, and indicative data from laboratory tests and image studies. Anticoagulation constitutes the mainstay of the clinical management of individuals with PTE. The aim of this report is to describe an adolescent female with PTE due to a single risk factor. Estimated incidence of PTE in Western countries is 5/10,000 population and this condition is rare among the youngest people. The use of OCs have a high efficacy with low rate of adverse effects, usually thromboembolic.<sup>1-7</sup> The risk of venous thrombosis is higher with the use of drospirenone or cyproterone combined OCs.<sup>6,7</sup> Although rare, life-threatening thrombotic/hemorrhagic events may occur in young women.<sup>5</sup> The patient herein reported is a middle adolescent (14-17 years) who had a unique risk factor of PTE - the com-

bined OC method.<sup>1,2,6</sup> DVT was not showed by echo-Doppler images of the lower limbs, but PTE was suspected by ventilation-perfusion scintigraphy and confirmed by computed angiotomography (Figure 2). Chroustova *et al.* reviewed 57 young Czech women under hormonal contraception and found 42% of them with ventilation/perfusion scintigraphy findings consistent with diagnosis of PTE, but only 19% of the patients had DVT confirmed by echo-Doppler images of the lower limbs.<sup>2</sup> Those authors concluded that even very young females can have PTE related to the use of OC.<sup>2</sup> Some Turkish authors have emphasized hormone-related chest disorders affecting young women,<sup>3,4</sup> and the aim is to enhance the suspicion index of physicians in primary health care about this preventable and challenging condition.<sup>6</sup> Because the use of OCs may cover almost 1/3 of a woman's life, this matter is very important.<sup>5</sup> Erkut *et al.* reported bi-atrial thrombosis and multiple PTE during OC therapy in a 39-year-old Turkish woman who presented with a patent foramen ovale, but without paradoxical embolism.<sup>3</sup> OC containing drospirenone are often used by adolescent athletes searching better performances.<sup>6</sup> Despite the lack of other risk factors like age more than 35 years, obesity, sedentariness, and smoking, compounded OCs can increase up to three times the risk of venous thromboembolism.<sup>6</sup> The patient of our case study did not have cardiac defects nor intracardiac mural thrombosis, and both the superficial and deep venous systems of the lower limbs appeared nor-

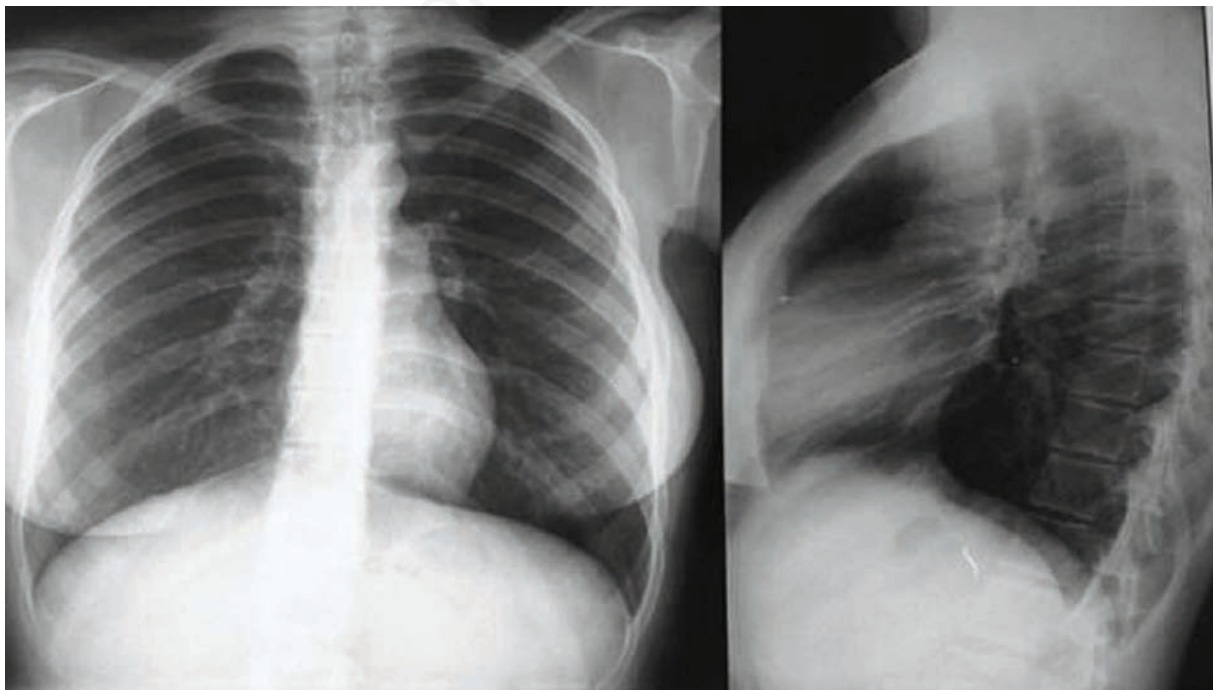
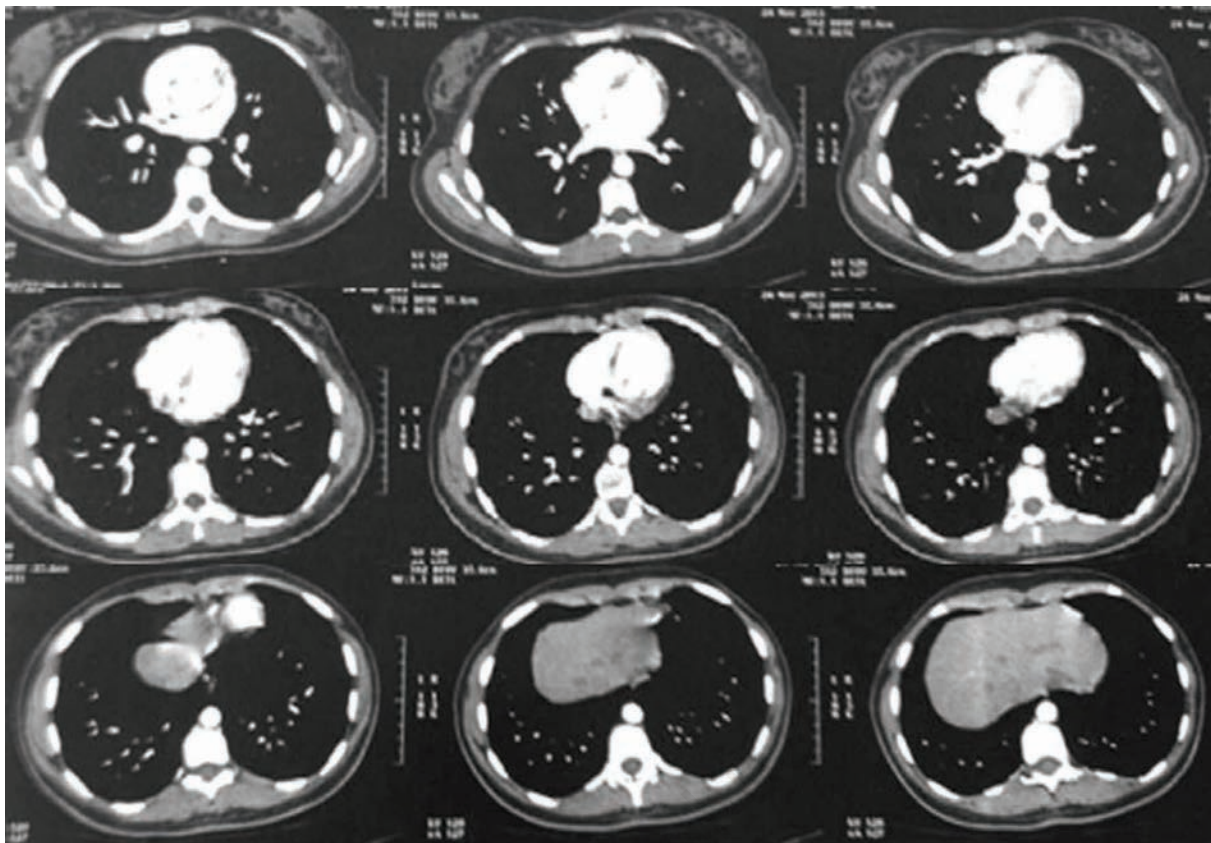


Figure 1. Chest radiograph showing normal lungs, mediastinum and pleural spaces.



**Figure 2. Pulmonary angiogram showing a filling defect at medial subdivision of the anterior medial basal segmental artery of the left lung. The rest of the arterial tree had normal courses and diameters, without filling abnormalities until the subsegmental levels.**

mal on admission. Therefore, one might consider the rare hypothesis of a pulmonary thrombus with in situ origin, in addition to the main possibility of resolution of an unsuspected DVT in her lower extremity. Three months after the first appearance of thoracic pain would be a sufficient time for spontaneous dissolution of a small initial thrombus of the calf, which could have caused the embolic episode. The diameter of the occluded segment of her pulmonary artery contributes to this hypothesis. Another possible concern could be about the normal levels of D-dimers in this setting; nevertheless, this marker was not evaluated before three months of PTE evolution; moreover, D-dimers of control obtained 30 days after the admission testing showed a level four times lower. Clinical management of this PTE started with unfractionated or low-molecular-weight heparin, and was followed by continuous utilization of an oral anti-vitamin K anticoagulant (warfarin). After anticoagulation, the prothrombin time was 35.9", activated partial thromboplastin time: 48.3", and international normalized ratio of 2.0 to 3.0. This patient stopped using hormonal contraceptives and is asymptomatic.

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