Case Study: Clinical Problem Solving in a Case of Pulmonary Embolism

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Case

S. I., an 80-year-old married male visited his family physician (FP) with new complaint of 3 days of localized right costal pain occurring only in the recumbent position. The pain began suddenly, without any traumatic event, and continued without any change in location and intensity. Otherwise, he felt healthy, but spent 2 nights in sitting upright with poor sleep, owing to this pain.

Before the recent complaint S. I. was considered healthy and functioning senior patient, who suffers chronically from constipation, which is managed by glycerin suppositories.

He looked tired but healthy, with normal vital signs showing no sign of respiratory distress. His chest examination was entirely normal, except for the palpation of a painful point on the right intercostal space in the mid-axillary line.

The FP hesitated between the diagnoses of intercostal neuralgia or early thoracic herpes zoster. To define the pain as being entirely superficial, the FP injected 2 ml of subcutaneous lidocaine at the point of tenderness, with almost immediate subjective relief by the patient.

The following morning the patient returned with the same complaint without any other symptoms and signs. The patient further stated that injection had been helpful only for several hours, with the pain recurring in the same point and
disturbing his sleep again. The patient was prescribed topical diclofenac and was requested to call the following day. The FP had no explanation for his complaint, but it didn’t appear serious.

The following day he returned with the same complaint and the same findings on physical examination.

The FP became more concerned, but was unable to define other differential diagnoses. Nevertheless, he performed a local corticosteroid injection in the painful point, as a palliation, and sent the patient for chest radiography, for remote possibility of intra-thoracic pathology.

The radiologist described a small infiltrate in the base of the right lung, with otherwise normal findings. A previous radiograph from 6 months ago that was ordered because of cough and respiratory difficulty was interpreted as normal.

During the next 2 days the FP was in phone contact with the patient, who stated that he felt better, with a resolution of the pain and insomnia.

Five days after this patient's first presentation and 2 days after the disappearance of his costal pain, the FP was still concerned because of the results of the chest radiograph. He requested the patient to obtain another chest radiograph, whose subsequent interpretation by a senior radiologist was very similar to the previous interpretation. S. I. stated that he has no pains or other complaints, but “during several days spitted up several bloody clots”.

This new anamnestic data sounded important. Nevertheless, in this patient and this presentation, any inflammatory reason (bronchiectasis, pneumonia, bronchitis) was very unlikely. In addition, there was no evidence for trauma, foreign body, mitral stenosis or left ventricular failure now or in previous investigations of this patient. Hemorrhagic diathesis and primary pulmonary hypertension were incompatible with our clinical picture. Pulmonary neoplasia (in this non-smoker), arterio-venous malformation (unusual in this age group), vasculitis and amyloidosis (without any other appropriate symptoms and signs) were hardly likely. Pulmonary thromboembolism could explain this patient's complaints (1), but he looked healthy, without any complaint or sign of respiratory distress: in all examinations in those days – heart rate was around 64 beats per minute, respirations – 12-15 per minute with excellent oxygen saturation on room air (95-99%). Even his presenting symptom – local positional chest pain – vanished.

The FP then considered the remote possibility of pulmonary emboli, cancer or tuberculosis (very unlikely in this setting), and in spite of the lack of any other symptoms and signs, sent S. I. for a chest CT. This referral wasn’t emergent, and served mainly to clear the diagnostic uncertainty.
The spiral CT was performed 3 days later, and the FP received a phone call from the radiologist, stating that the results were compatible with a thrombus in the main artery of the right lung, extending into the arteries of the right lower lobe and the right upper lobe. Filling defects were seen in the segmental arteries of right lower lobe, and a possible small thrombus was noted in the left lower lobe. The FP called the patient immediately for a reevaluation. S. I. at this time had no complaints, whatsoever. He had no pain or dyspnea, but reported that "sometimes he coughs up bloody clots". He appeared well, with a pulse of 60 beats per minute. He was breathing without any distress, at 14 respirations per minute and an oxygen saturation on room air of 98%. Nothing relevant was found on examination.

Facing the diagnosis of pulmonary embolism, the FP gave SI a dose of low molecular weight heparin in the clinic.

The discrepancy between the natural course of apparent massive pulmonary embolism in this patient and the benign clinical course led the FP to an urgent consultation with a senior cardiologist. The conclusion was that this patient needed anti-coagulation and therefore was hospitalized. Over the course of his hospitalization, S. I. was hemodynamically stable and felt generally well, without bloody coughs, with an oxygen saturation on room air of between 94 to 98%. 3 days later he was uneventfully discharged with recommendation to "continue heparin and to begin oral anti-coagulation".

On examination, the patient appeared in good health.

Several considerations:

• When should a doctor suspect an urgent condition in a patient if the data from anamnesis and physical examination is not alarming?
• Is it justifiable to "turf" a patient with a "panic diagnosis" to the emergency room, when the patient is stable, only because the suspected diagnosis is threatening (when the time that passed acts against this severity)?
• We try to cope with the presenting symptoms and signs.
• Probably, the second visit of SI should have alerted us. Short action of lidocain certainly didn't reject the previous working diagnoses, but the continuation of the complaints should alert the FP to request chest x-rays. But at this point any hypothesis for grave pathophysiology seems premature. Chest pain is not sensitive or a specific sign for pulmonary embolism (2).
• Third visit: the FP is obviously uncertain, but nevertheless he injects cortico-steroids, as an anti-inflammatory palliation, according to his early suspicion. The FP is probably biased by his initial hypothesis.
• After the abnormal x-rays were obtained, the FP was, at this time, still hesitating, because the patient did not appear distressed and in fact, was improving.
• Only 5 days after the first visit – new and more specific complaint (blood – spitting).
• This complaint and the abnormal chest x-ray required CT scanning.
• After establishment of the diagnosis of emboli, 2 things were clear: the patient was hemodynamically stable and the benefit of hospitalization wasn't certainly substantial. But the patient helped to resolve the dilemma, because he wanted to be hospitalized.

What we have learned from this case?

1. Superficial local chest pain and sensitivity may be the only clinical presentation of massive pulmonary embolism, even in the absence of tachycardia, tachypnea, hypoxia, and reported respiratory distress.
2. Good history taking and scrupulous physical examination may be of limited diagnostic significance even in the case of massive pulmonary embolism. In this case only observation of changes over time were helpful.
3. Even in massive pulmonary embolism the correlation between the clinical picture and spiral CT data – probably the best standard – may be scarce. What does "massive pulmonary embolism" mean? Grave clinical picture or impressive roentgenographic finding? There may be some confusion concerning the lack of correlation between the CT massive PE and the clinical picture in some patients (3).

Massive pulmonary embolism is defined (3) by clinical criteria of arterial hypotension and cardiogenic shock. This definition doesn't use criteria of size. But the term "massive" is confusing, and not exclusively for the individual practitioner because of the literal meaning of the word "massive".

4. The question of referral to hospital in such discrepant cases remains unresolved. Patients with PE were reported to be treated successfully at their homes, although this approach is still discordant with the time–honored medical tradition (4). Even if we try to base our decision on contemporary experience or on existent guidelines (5), we still tend to fall back on previous practices.

References

