

Low Back Pain Revealing Bilateral Proximal Pulmonary Embolism with COVID-19

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Abstract

Background: Pulmonary embolism (PE) is frequently encountered in emergency departments. It is a serious condition with significant morbidity and mortality. A high prevalence of thromboembolic events has been reported with COVID-19. The similarity in clinical presentation between the two diseases makes accurate diagnosis even more difficult. Atypical presentations can lead to delayed diagnosis and treatment, with a fatal outcome within hours. We report the case of a man who presented to the emergency department with bilateral low back pain as a presenting sign of bilateral proximal PE due to COVID-19.

Case Report: A 35-year-old man visited the emergency department for bilateral low back pain with a fever. His medical history included type 2 diabetes. Vital signs were as follows: blood pressure was 120/80 mmHg, heart rate was 110 bpm, respiratory rate was 21cpm, desaturation of 80% on room air and temperature was 37.8°C. An unprepared abdominal radiograph revealed significant aerosols. A thoracoabdominal-pelvic CT scan was performed revealing bilateral proximal pulmonary embolism with a floating thrombus of the main pulmonary artery associated with signs of severity and extensive COVID-19 pneumonia on the CT scan. Anticoagulation was initiated and the patient was transferred to the COVID-19 unit.

Conclusion: The diagnosis of PE should always be considered in the presence of any abdominal or lumbar pain of undetermined etiology. The presence of atypical pain in a patient with COVID-19 pneumonia could be a sign of a discrete evolving PE, which should be diagnosed as early as possible to ensure timely and appropriate management.

Keywords

Low back pain, pulmonary embolism, COVID-2019

Abbreviations list

PE: Pulmonary embolism, COVID-19: coronavirus disease 2019, LBP: low back pain, ED: emergency department, aPTT: activated partial thromboplastin time, CT: computed tomography, RV: right ventricular, LV: left ventricular

INTRODUCTION

Pulmonary embolism (PE) is frequently encountered in the emergency department. A higher prevalence of thromboembolic complication has been described recently in patients with coronavirus disease 2019 (COVID-19), increasing its morbidities [1].

Low back pain (LBP) and abdominal pain are common reasons for emergency department (ED) visits. Atypical presentation of PE is rare and makes accurate diagnosis even more difficult [2]. The polymorphism of clinical symptoms of PE and their low sensitivity could be the reason for the delayed

diagnosis of this condition, which could be life-threatening within hours. In some cases, patients with PE may present with unusual symptoms such as LBP and/or gastrointestinal signs that could refer to other diagnoses related to the affected organ [2]. Further medical evaluation should be considered if no convincing explanation has been found for the diagnosis of back and abdominal pain, given the potential severity of the underlying pathology.

CASE PRESENTATION

A 35-year-old male patient was admitted to our ED in July 2021 with persistent bilateral LBP. Initial symptoms have been evolving for 12 days and consist of Influenza-Like Illness including fever and asthenia. He attended a General Practitioner who performed a nasopharyngeal swab followed by the detection of the COVID-19 viral genome with a reverse transcriptase-polymerase chain reaction. The test was positive, and the patient was initiated on a symptomatic treatment. Regarding the worsening of his medical condition and the onset of progressive dyspnea associated with intense bilateral LBP spreading to the abdomen, the patient was referred to our emergency department. No drug, surgical, or smoking history was reported, but the patient did report a past medical history of type 2 diabetes mellitus.

On examination, the body temperature was 37.8°C. The heart rate was 110 beats per minute and the blood pressure was 120/80 mmHg. The patient's respiratory rate was 21 breaths per minute and the SpO₂ was 97% on room air. Heart and pulmonary auscultation were normal. Glasgow Coma Scale score was 15 and the neurological examination was normal. The abdomen was tensely distended, painful, and tympanic. An electrocardiogram was performed and revealed a sinus tachycardia over 102 beats per

minute. An abdominal X-ray was done and found a large bowel gaseous distension (Figure 1).

Figure Captions



Figure 1: Abdominal X-ray showing large bowel gaseous distension

The blood test results showed Hyperleukocytosis of 17750/mm³ (normal range [4000-10000/mm³]) with a large amount of neutrophil containing of 14540/mm³ (normal range [2000-7500/mm³]), hemoglobin of 11.4 g/dl, thrombocytosis of 439000/mm³ (normal range [150000-400000/mm³]), increased C-reactive protein of 371.7 mg/l (normal range < 5 mg/l), blood urea of 9.5 mmol/l (normal range 8.3<mmol/l), creatinine of 85 μmol/l (normal range [62 – 106 μmol/l]), increased high-sensitivity cardiac troponin of 20.9 ng/l (normal range < 14 ng/l), activated partial thromboplastin time (aPTT) ratio of 1.01 and Prothrombin Time of 75% (normal range [70 – 100%]). Other investigations such as liver enzymes, D-Dimer, arterial blood gas, fibrinogen, procalcitonin, and N-terminal pro-brain Natriuretic Peptide were unavailable.

The evolution was characterized by the rapid drop in oxygen saturation below 80 % on room air. Chest, abdominal, and pelvic computed tomography (CT) scan with contrast revealed a

bilateral proximal PE with a floating clot in the pulmonary trunk associated (Figure 2) with heart right dilation (right ventricular (RV) / left ventricular (LV) volume ratio > 1). The interventricular septum was straight. It also showed bilateral lower lobe predominant ground-glass opacities associated with crazy paving patterns. The estimated degree of pulmonary impairment was between 25-50% (Figure 3). The abdominal and pelvic imaging were normal.

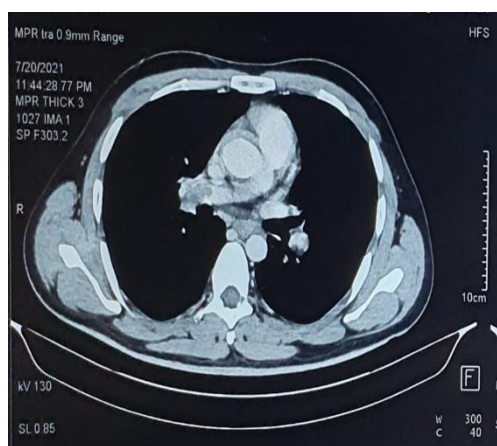


Figure 2: Chest computed tomography scan with contrast showing bilateral proximal pulmonary embolism



Figure 3: Chest computed tomography scan showing bilateral ground-glass opacities associated with crazy paving pattern

The patient was transferred to our COVID-19 unit. Thrombolytic therapy was initially discussed because of critical findings on the chest CT scan.

Given the fact that our patient was hemodynamically stable and did not present signs of heart failure, he was initiated on unfractionated heparin.

The evolution was characterized by a clinically relevant improvement. Dyspnea and LBP have completely disappeared. We performed two other chest CT scans with contrast on the fourth and the eighth day of hospitalization which revealed a significant improvement in comparison with the first CT scan and a regression of the heart right dilation (RV/LV volume ratio < 1). The patient was discharged home on the fifteenth day of hospitalization, with instructions to continue the anticoagulant treatment (Rivaroxaban) and re-attend the clinic for pulmonary and cardiovascular assessment in 1 month.

Informed written consent was obtained from the patient for publication of the report and radiological findings, as well.

DISCUSSION

The diagnosis of PE is not always easy although there are multiple scores that can be used such as Well's criteria and Geneva score, leading us to classify probability as low, intermediate, and high. These scores guide us to choose the appropriate additional examinations to establish the diagnosis [3].

The similarity of respiratory signs in PE and other cardiorespiratory diseases could make it difficult to make an accurate diagnosis as well and clinical signs such as dyspnea, cough, tachycardia, and chest pain are not specific and could be found in other clinical conditions such as acute coronary syndrome, aortic dissection, pneumothorax, pericarditis [4] and COVID-19 infection. In the case of LBP, physicians usually think of renal or rheumatologic disease first. In this case, the patient was admitted initially for

LBP extending to his abdomen without symptoms suggestive of PE. He was initially misdiagnosed with a surgical emergency regarding the large bowel gaseous distension found on the abdominal X-ray. The appropriate diagnosis was suspected, and further investigations were performed following the appearance of desaturation during monitoring.

We looked for similar cases in the PubMed/MEDLINE database using the keywords “pulmonary embolism”, “back pain” and “low back pain”. We found two cases of PE with back pain and only one case of PE with LBP [1,5,6].

Rare cases of PE revealed by gastrointestinal signs have been reported in about 6.7-11% of patients with PE which is considered a significant rate [7].

The mechanisms of LBP in patients with PE are not well known. Some studies suggest that PE can be responsible for abdominal pain. This may be caused by gallbladder or liver capsule dilation induced by right heart failure secondary to PE [7]. Pulmonary hypertension may cause hepatobiliary portal infiltration and abdominal lymphedema. The elevation of right ventricle pressure could be responsible for the re-opening of the foramen ovale which may decrease blood supply to the abdominal organs [8]. Increased blood viscosity and low oxygen may induce small embolus that causes focal necrosis of abdominal organs [9]. Some studies suggest that neurological disorders such as pseudo-ileus can be caused by PE [10]. The last situation is similar to our case and explains the large bowel gas distension found on the abdominal X-ray. Other studies suggest that the abdominal pain may be caused either by lateral stimulation of the diaphragm or by the stimulation of the ending sensitive nerve of the abdominal wall and the back secondary to thrombus formation in the blood vessel wall [11].

Through this observation, we wanted to highlight the interest of an etiological research of an unexplained abdominal and LBP with appropriate additional examinations such as chest and abdominal CT-scan especially in patients with COVID-19 infection so the diagnosis of a possible PE could be performed earlier.

CONCLUSION

PE should always be kept in mind in front of atypical symptoms such as LBP and abdominal pain for which no accurate diagnosis, related to the affected organ, was found. These symptoms, especially in patients with COVID-19 infection, must draw attention to a possible PE so that we can establish the diagnosis earlier and treat it if this condition rapidly evolves in a negative way.

Conflict of Interest Statement

The authors declare no conflict of interest.

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