

Case Series

Pseudo Murphy's Sign Camouflaging a More Sinister Diagnosis

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Abstract: Aim and background: Pulmonary embolism (PE) is a life-threatening medical emergency where a blood clot travels from somewhere else in body, usually from deep vein thrombosis of legs to pulmonary artery and blocks it, leading to high mortality and morbidity. If not treated on time, it can lead to death. **Case Description:** In the following two cases, we describe patients with presentation of pain abdomen which was finally diagnosed as acute pulmonary embolism. **Conclusion:** Pulmonary embolism has a varied clinical symptomatology and can cause frequent diagnostic dilemma and challenge, which can delay timely diagnosis. **Clinical Significance:** It is essential for the critical care physician to be aware of varied symptoms and to have a high index of suspicion.

Keywords: Pulmonary embolism (PE), Acute abdomen, Abdominal pain, Acute cholecystitis, venous thromboembolism.

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INTRODUCTION

Pulmonary embolism is common and a potentially lethal condition, which occurs in both critical and non-critical settings. The incidence of this condition was historically low due to underdiagnosis; but has improved with the advent of newer imaging techniques. According to Centers for Disease Control and prevention, as many as 900000 patients could be affected with deep vein thrombosis or pulmonary embolism each year [1]. PE is the cause in 25% of sudden deaths, and 25% of patients with PE have presenting symptom as sudden death [1, 2]. PE has a complex symptomatology which commonly includes dyspnea, pleuritic pain, apprehension, cough, hemoptysis, central chest pain, palpitations and syncope [3]. Here, we describe two patients who had atypical clinical symptoms with imaging findings suggestive of a misleading diagnosis; but was subsequently diagnosed as pulmonary embolism due to high suspicion. This case report emphasizes the need for critical care

physicians to be aware of atypical presentations of life-threatening conditions, which benefits in timely diagnosis and treatment.

CASE 1 DESCRIPTION

A 72-year-old man presented with sudden onset upper abdominal pain with nausea, vomiting and loss of appetite for one day. He described the pain as excruciating and debilitating. He was initially evaluated elsewhere with an ultrasound abdomen which showed distended gall bladder and was referred to our centre for possible cholecystitis and surgical management. Repeat ultrasound scan was done to confirm the diagnosis which showed a distended gall bladder with no obvious signs of pericholecystic inflammatory changes, but a strongly positive sonographic Murphy's sign. He was planned for Computed tomography (CT) scan of abdomen for further course of treatment. In CT room, he developed sudden worsening of abdominal pain associated with breathlessness, scan was abandoned and

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shifted to intensive care unit (ICU). He required intubation with mechanical ventilation. After stabilisation, contrast enhanced CT scan(CECT) abdomen (Figure 1) was done which showed distended gall bladder with no pericholecystic fluid, but significant consolidation changes were noted in bilateral lung bases with reticular densities in the visualised lung fields, and some filling defects in the pulmonary arteries. Presence of reticular densities suggested interstitial edema, and with filling defects indicated possibility of a pulmonary embolism manifesting as a pleuritic pain. History was revisited and patient relatives gave history of similar complaints in past two months with limitation in daily activities. For confirmation, Computed Tomography – Pulmonary Angiogram (CTPA) was done which showed findings of new onset interval appearance of pleural effusion (compared to previous scan) (Figure 2 and Figure 3), and pulmonary embolism involving right lower lobe

and left upper lobe segmental branches. Patient was started on therapeutic anticoagulation. Duplex scan of bilateral lower limb showed right popliteal vein thrombosis. Two-dimensional echocardiography showed normal chambers with normal left & right ventricular function. Patient condition improved, pain was managed and was extubated the next day. After a day of observation in ICU, he was shifted to the ward. He was hemodynamically stable, and relieved of abdominal pain. Magnetic Resonance Cholangio Pancreatography (MRCP) was done which showed distended gall bladder with sludge, no definitive gall bladder calculus, no pericholecystic edema or fat stranding. Hence, he was not planned for any surgical management of gall bladder. Patient did not develop contrast induced injury during the hospital course. He was later discharged home with oral anticoagulant and was advised for regular follow up.

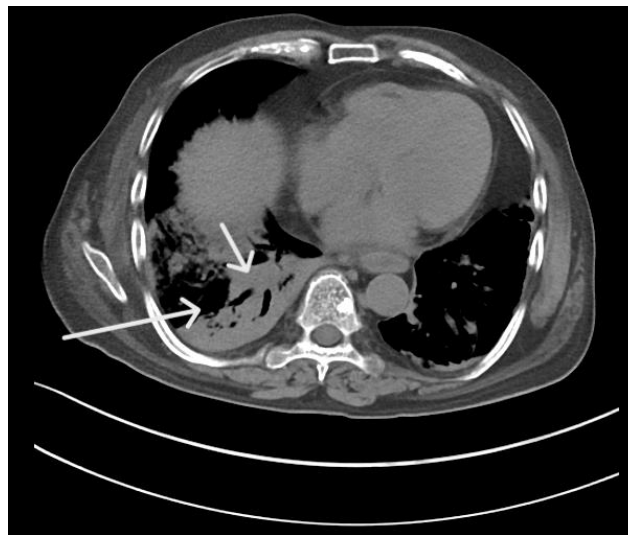


Figure 1: Axial plain CT scan images in mediastinal window at level of lower chest showing patchy consolidation in basal segments of right lower lobe (Arrow) with absence of pleural effusion (Patient 1)

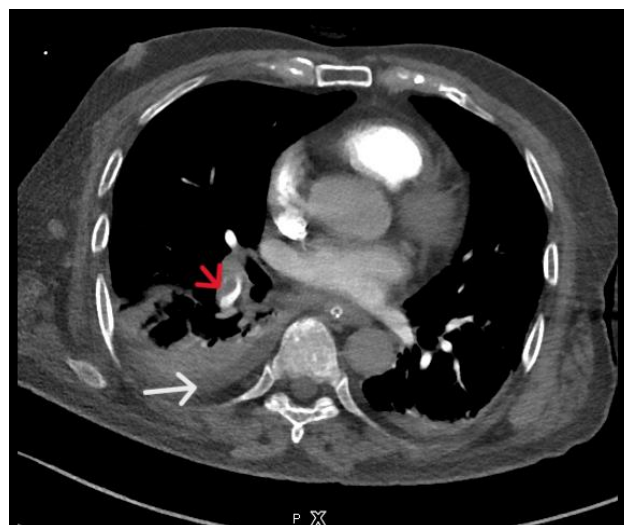


Figure 2: CTPA axial images showing intraluminal filling defect in branches of right descending pulmonary artery (Red arrow) with quick interval appearance of right sided pleural effusion(White arrow) (Patient 1)



Figure 3: CTPA axial images showing intraluminal filling defect in left upper lobe segmental arteries (Arrow)- suggestive of thromboembolism (Patient 1)

CASE 2 DESCRIPTION

A 20-year-old lady presented to the hospital with complaints of abdominal pain. She initially went to a clinic where she was treated, but due to persistent symptoms came to our hospital. The abdominal pain was described as sudden in onset, severe in nature and was localized to the upper abdomen with radiation to the back. On examination, she had sinus tachycardia and tachypnoea. She was evaluated with ultrasonography of the abdomen which showed distended gall bladder with positive sonographic Murphy's sign. She was further evaluated with a CECT of the abdomen, the lower cuts of which showed dilated pulmonary arteries (Left > Right) and dilated right heart chamber. Pulmonary embolism was suspected and further evaluation was done with a CTPA scan which confirmed the diagnosis. CTPA showed a large pulmonary embolus of right pulmonary artery and left descending pulmonary artery and segmental branches. Echocardiography showed dilated right heart chambers with right ventricular (RV) dysfunction. She was admitted in the ICU, thrombolysed and was started on therapeutic anticoagulation. She improved symptomatically. Repeat echocardiography scan showed improved right ventricular (RV) function. Further history revealed history of polycystic ovarian disease (PCOD), for which she was taking oral contraceptive pills. She was later discharged home with oral anticoagulant, and alternative drugs for management of PCOD.

DISCUSSION

Pulmonary embolism is a potentially lethal emergency and requires time sensitive intervention to save life and frequently poses as a diagnostic challenge.

It can sometimes lead to wrongful misleading diagnosis and can hinder timely management or altogether prevent it.

Pulmonary embolism already a diagnostic challenge gets intensified in the setting of critically ill patients due to multiple factors such as barrier to communication, barrier to physical examination and abundance of competing alternative explanations for the same symptoms and signs. Utility of gold standard investigations like Computed Tomography Pulmonary Angiography, gadolinium enhanced Magnetic Resonance Angiography, Ventilation Perfusion scanning are also limited in the ICU setting often due to hemodynamic instability.

Our patients presented with acute upper abdominal pain and was evaluated for acute abdomen with high suspicion for acute cholecystitis. Ultrasound abdomen was done which showed distended gall bladder with sludge. Ultrasound abdomen showed distended gall bladder with strong probe tenderness (Positive sonography Murphy's sign). A positive Murphy sign is described as an increased discomfort or inspiratory arrest (a catching of breath) during deep inspiration when the examiner palpates the gall bladder fossa just beneath the liver edge. A positive sonographic Murphy sign is the presence of maximal tenderness elicited over a sonographically localized gallbladder. The sensitivity is 86% and specificity is 35%. The specificity increases to 77% in the presence of gall stones [4]. In our patients, symptoms of acute abdomen with positive sonographic findings (Pseudo Murphy's sign) lead to evaluation in a wrong track. The final diagnosis was made on basis of CT evaluation and high index of suspicion.

Our patient had a significantly distended gall bladder. Even though the common cause is obstructed cholecystitis, possibility of other non-emergent causes of distended gall bladder also should be considered such as morphologic variants, fasting state, atony (diabetes mellitus), advanced age, hydrops, empyema [5].

Abdominal pain in pulmonary embolism is rare and is not regularly mentioned in the traditional teachings but has been reported in few case reports. Location of the abdominal pain is mostly in the upper abdomen, especially the ipsilateral side of pulmonary infarct. Most cases are lower lobe/basal embolism or infarction [6]. It is crucial to point out that most pulmonary embolism patients with abdominal pain have no other typical symptoms, resulting in a higher rate of misdiagnosis. There are multiple theories for abdominal pain in pulmonary embolism, some of which are – acute onset hepatic congestion, diaphragmatic irritation by a basal pulmonary infarct, pain due to underlying cause of PE such as ovarian vein thrombosis, paradoxical embolism, or referred chest pain [7].

Typical but non-specific findings of pulmonary embolism in chest imaging includes basilar atelectasis, elevation of diaphragm, pleural effusion, signs of interstitial edema. Reticular densities in the absence of fibrotic lungs are indicative of interstitial edema, infiltration or inflammation [8]. All these should always suggest PE when there are no ready alternative explanations and when they are new in onset. Our first patient had new pleural effusion on repeat CT which along with clinical worsening and high index of suspicion, helped in the timely diagnosis of pulmonary embolism.

CONCLUSION

Early diagnosis in our patient helped in initiating treatment which prevented worsening of the patient clinically and also avoided possible hemodynamic instability. Early diagnosis in pulmonary embolism not only reduces mortality but also lowers morbidity. This case report emphasize that some life-threatening emergencies can pose a diagnostic challenge with risk of misdiagnosis even in this age of advanced and modern medicine.

Clinical Significance

Knowledge of varied clinical symptoms of pulmonary embolism helps in timely diagnosis and

early initiation of life saving treatment, which inturn significantly improves morbidity and mortality.

List of abbreviations:

PE – Pulmonary Embolism
ICU – Intensive Care Unit
CT scan – Computed Tomography Scan
CECT scan – Contrast Enhanced Computed Tomography Scan
CTPA – Computed Tomography – Pulmonary Angiography Scan
LV – Left ventricle
RV – Right Ventricle

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REFERENCES

- Centers for disease control and prevention: Data and statistics on Venous Thromboembolism [Internet]. Atlanta; Updated June 9, 2022. Accessed January 26, 2023.
- Meyer, N. J., Schmidt, G. A. (2015). Pulmonary Embolic Disorders: Thrombus, Air and Fat. In: Hall, J. B., Schmidt, G. A., & Kress, J. P., editors. Principles of Critical Care. 4th edition. New York: McGraw Hill Education, Chapter 39. p 318.
- Stein, P. D., & Henry, J. W. (1997). Clinical characteristics of patients with acute pulmonary embolism stratified according to their presenting syndromes. *Chest*, 112(4), 974-979.
- Bree, R. L. (1995). Further observations on the usefulness of the sonographic Murphy sign in the evaluation of suspected acute cholecystitis. *Journal of clinical ultrasound*, 23(3), 169-172.
- Block, B. (2012). Abdominal Ultrasound: Step by Step, 2nd edition. New York. Thieme. p 115.
- Han, Y., & Gong, Y. (2019). Pulmonary embolism with abdominal pain as the chief complaint: A case report and literature review. *Medicine*, 98(44), e17791.
- Jolobe, O. M. P. (2020). Abdominal pain in pulmonary embolism. *QJM: An International Journal of Medicine*, 113(1), 71-72.
- Webb, W. R., Muller, N. L., & Naidich, D. P. HRCT Findings: Linear and Reticular opacities. In: Webb, W. R., Muller, N. L., Naidich, D. P., Editors, High-Resolution CT of the Lung, 5th edition. Philadelphia. Wolters Kluwer Health. P 90-92.

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