

CASE REPORT

Massive Bilateral Pulmonary Thromboembolism – A Bolt from the Blue Case ReportSasidharan A,¹Remya S.²

1-2. Department of Forensic Medicine and Toxicology, Amrita School of Medicine, Amrita Vishwa Vidyapeetham, Kochi.

Abstract:

Thrombosis originating from the deep veins of the lower limbs can result in recurrent emboli leading to acute on chronic pulmonary thromboembolism. The death in such situations would be sudden and unexpected due to acute right sided heart failure (cor pulmonale). There can be few preceding non-specific symptoms such as cough and/or dyspnoea, especially in non-hospitalised decedents. Many a time pulmonary thromboembolism is only detected in a medicolegal autopsy. The sudden and unexpected death in an apparently healthy individual paves the way for a police inquest procedures, and a medicolegal autopsy would be the only legal and logical alternative to find a closure. However, massive bilateral pulmonary thromboembolism occluding almost more than 80 percentage of the pulmonary artery vasculature is an extremely rare phenomenon in a medicolegal autopsy. This case report has been prepared to discuss on such a rare presentation, discovered during the medicolegal autopsy of an apparently healthy 46-year-old individual who collapsed on the sides of a road, and was brought dead to the hospital.

Keywords: Cor pulmonale; Pulmonary thromboembolism; Sudden death; Venous thrombosis.

Introduction:

Venous thrombosis within the veins of the lower limbs usually results in pulmonary thromboembolism (PTE). When PTE is of the massive grade, it may lead to fatal acute cor pulmonale (right sided heart failure). Among cardiovascular diseases, PTE is the third most common cause of death.¹ The mortality rate of PTE is higher than acute myocardial infarction.^{2,3} A vast majority of PTEs occur very soon after presentation of their first symptom – usually within an hour.⁴ The death would be sudden and unexpected as a result of acute right ventricular dysfunction, often causing the police officer in charge of the investigation to be puzzled. As in this case report, a medicolegal autopsy is the only recourse to find out the exact cause of death in such situations.

Case Report:

A 46-year-old male, security officer by profession, while walking to his workplace from his residence, coughed out a few clots of blood, following which he slumped on to the sides of the road, and then fell unconscious. On arrival at hospital, he was declared dead, and that initiated a police inquest. As per the requisition form submitted by the investigating officer (IO), there was no prima facie evidence as to the cause and manner of death. The IO said that he was suffering from Diabetes Mellitus, and was once hospitalised for dyspnoea recently. Even though further details were sought, they were not made available. The autopsy was conducted at the Autopsy Block in AIMS, Kochi. The body of the decedent was that of moderate built and moderate nourishment. Dried blood stains were seen within the nostrils, and mouth

contained a few clots of blood. There were no antemortem injuries on the body. Air passages were smeared with blood. Heart (220grams) was normal, except for left ventricular hypertrophy (2cms thick). On dissection of the heart, a 10cms long non-friable and firm antemortem thrombus was seen in situ, extending from the chamber of the right ventricle through the trunk of the pulmonary artery, into the right and left pulmonary arteries of the lungs (Figure 1). The thrombus continued for another distance of 8cms into each lung, completely occluding all the lobar arteries of both the lungs – the entire pulmonary artery vasculature (approximately more than 80 percentage) was thereby continuously occluded with antemortem thrombus (Figure 2). Stomach contained partially digested food materials (with no unusual smell) in a coffee brown coloured (consistent with altered blood) semi-solid medium; the mucosa of the stomach was normal. There were no other significant internal examination findings. The cause of death was opined⁵ as being strongly consistent with acute right sided heart failure due to massive bilateral pulmonary thromboembolism; and the manner of death being a natural death.

Discussion:

Even though advanced age is a known risk factor for PTE, one meta-analysis has shown middle aged individuals to be presenting with a high frequency of the same, as seen in this case report.⁶ Non-pathognomonic features such as dyspnoea and or chest pain are commonly associated with PTE as a pre-existing manifestation, one to few days before death. The occurrence rate of these features were seen to be higher in outpatients, rather than in-hospital patients, similar to the case in discussion.⁶ Deaths in PTE have a strong association with right ventricular dysfunction.^{7,8} Though right ventricular hypertrophy is seen in such deaths, it is not a mandatory finding – being absent in the case discussed here.⁹ During autopsies of massive PTE (extending up to the distal parts of lobar/segmental arteries) the

Corresponding Author

Dr. Anu Sasidharan

Email : anusaidharan3000@gmail.com

Mobile No.: +91 7907630010

Article History

DOR : 06.03.2023 DOA : 03.09.2023

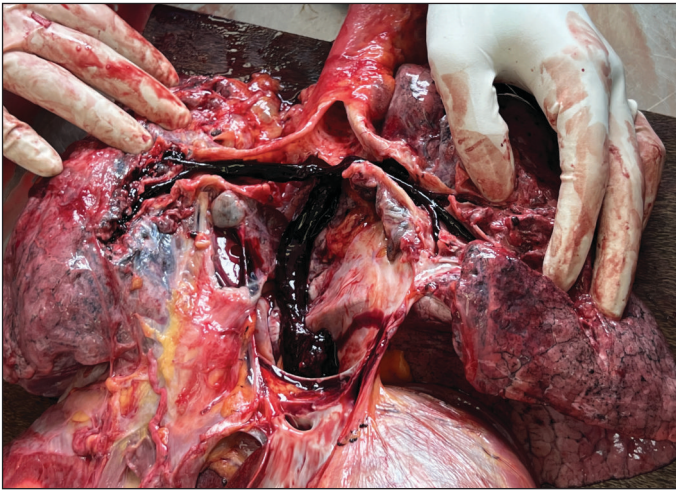


Figure 1. Massive bilateral pulmonary thromboembolism (heart has been removed to visualise and measure the complete extent of the antemortem thrombus).

pulmonary parenchyma usually appears pale due to infarction. But as seen in the present case, this is an infrequent finding. This could be due to dual perfusion of the lungs (pulmonary and bronchial arteries); or as a result of short duration from the onset of the symptoms up to death (sudden deaths).¹⁰ Over 90% of the emboli seen in lethal PTE, originates from deep leg veins (crural veins), the soleal veins being the major culprits since these are highly susceptible to venous stagnation, caused by prolonged sitting.^{11,12} The occupation of the decedent in this case report keeps up with this explanation. A very massive thromboemboli resulting in a single fatal attack is often referred to as an incidence of acute on chronic PTE, and this is a common feature relatively higher in outpatients. The mechanism being postulated as repeated thrombotic events which progressively worsens, climaxing in sudden unexpected death. Such patients can have a preceding cough and dyspnoea.⁶ These literature excerpts are abreast with the findings in the current case report.

Histopathological examination in medicolegal autopsies (vs. pathological autopsies) has been found to be not affecting the legal status and or outcome of the 'cause of death' section (of the report) in courts. This is true in medicolegal autopsies of both natural and unnatural deaths.^{13,14} Recently, the consensus is to avoid routine microscopic examination of tissues in medicolegal autopsies.¹⁵ Such ancillary investigations are only warranted in obscure/negative autopsies. Hence no histopathological examination was undertaken in this medicolegal autopsy. Moreover, the cause of death is being obvious – the massive bilateral PTE is sufficient in the ordinary course of nature to cause severe stress on the right side of the heart, and this in turn is sufficient to cause acute right sided heart failure and cardiovascular collapse, culminating in instantaneous death.

To conclude, acute massive PTE is still one of the most common life-threatening disease, and in such sudden unexpected suspicious deaths an autopsy examination is the only way out to have a closure. The prosecutor must be extremely forbearing and cautious while performing dissections in such medicolegal autopsies.

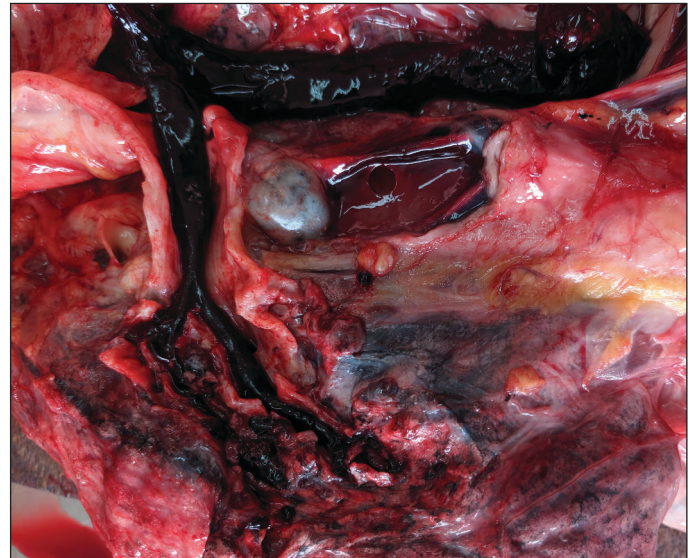


Figure 2. Closer photograph showing the extent of the thrombus into the distal portions of the lobar arteries (pulmonary vasculature).

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