## H30 The Postmortem Diagnosis of Pulmonary Thromboembolism in Decomposed Corpses: Limitations and Errors of the Autoptic Techniques

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After attending this presentation, attendees will be able to describe the impact of the problematic diagnosis of thromboembolism in decomposed corpses with venous leg ulcers.

This presentation will impact the forensic science community by demonstrating the importance of a correct autoptic technique in decomposed corpses in order to identify the fatal pulmonary thromboembolism in cases of uncertain deaths.

When a corpse decomposes, it is difficult to determine a cause of death diagnosis, especially when the cause is not a trauma. In fact, the transformative phenomena alters the internal organs, their location, and the skin. These modifications make it difficult to identify diseases or abnormalities as opposed to fresh corpses. Moreover, the histopathological examination of the decomposed organs can not identify histologic alterations due to colliquative necrosis, especially in the pancreas, brain, and lungs. Toxicological investigations are altered by postmortem acidification and anaerobic metabolism.

Deep vein thrombosis and pulmonary embolism represent the clinical manifestations of the same disease spectrum, known as venous thromboembolism, considered the third most common acute cardiovascular disease after ischemic heart disease and stroke. The autopsy of fresh corpses is considered the diagnostic gold standard.

Venous ulcers resulting from venous thromboembolism are the major cause of morbidity. It is a chronic disorder that can be highly debilitating, with a negative impact on the patient's quality of life.

The purpose of this study is to emphasize the role of the autopsy, through the analysis of skin ulcers, in the diagnosis of thromboembolism. The autoptic standard technique is characterized by a cut from the chin to the pubis and a craniotomy. This study emphasizes the role of the incision of other areas of the body, such as the lower limbs.

The case of an 81-year-old man found dead in his home after approximately seven days in the summer. An external examination and an autopsy were performed in order to determine the cause of death. The incision of the lower limbs was associated with traditional autoptic technique. The histopathological surveys and genetic testing for mutations of coagulation factors were performed. The corpse was in the emphysematous stage of decomposition with an initial skeletal reduction of the head. The analysis of the visible skin showed the absence of external traumatic injuries and the presence of gauze on the left foot. Also, in the nasal and ear bud cavities it was the presence of Calliphoridae and Sarcophagidae larvae. At external examination, it was possible to detect black eschar of the left foot corresponding to the cutaneous ulcer. The autopsy revealed the presence of blood clots in the heart and pulmonary vessels. The analysis of the lower limbs disclosed the presence of a deep ulcer on the left tibial region. The cutting of the ulcer revealed the presence of venous vessels with internal clots under the skin, which were also

found in the left iliac vein. Histological analysis with hematoxylin-eosin staining and immunohistochemistry of clots found in the lungs and the left leg vessels exhibited histological features of thromboemboli back to several weeks before death while clots found in the heart were attributable to a postmortem origin from blood stasis. The investigation did not reveal genetic mutations. The cause of death was due to a cardio-circulatory arrest secondary to a massive pulmonary embolism proved by the presence of a large thromboembolism inside the pulmonary vessels and another in the left iliac vein and in the small vessels under he cutaneous ulcer. Therefore, this case exhibits the role of a correct autoptic technique choice of and the analysis of venous leg ulcers in the postmortem diagnosis of fatal thromboembolic events.

In the postmortem analysis, it is difficult to distinguish clots from thrombi, especially in decomposed corpses. In this case, the careful external examination was conducted, despite the limitations of the decomposition and the presence of the larvae, by choosing the incision of the lower limbs, then correctly analyzing the clots found. The choice of the autoptic standard technique would not have allowed the identification of the thromboembolic origin and the correct postmortem diagnosis.

**Thromboembolism, Decomposition, Autopsy**