



Pathology/Biology Section - 2013

G109 Varicose Vein Rupture: Crime Scene of Uncertain Non-Natural Death?

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After attending this presentation, attendees will be able to evaluate the possible consequences of varicose vein rupture and the importance of an adequate scene investigation to understand causes of death.

This presentation will impact the forensic science community by discussing varicose vein rupture and its mortal complications.

One of the most commonly reported chronic medical conditions is represented by venous disease, including varicose veins and Chronic Venous Insufficiency (CVI). It is also a substantial source of morbidity in the United States and the Western world. Varicosis is found in 15% – 50% of the population. Clinically relevant classification of varicophlebitis appears useful: stage one includes varicophlebitis without involvement of the respective junctional valve in the groin or at the knee and deep veins; while in stage two, the proximal part of the thrombus has reached the respective junctional valves of the long or short saphenous vein; in stage three, it has entered the deep veins by means of these valves; in stage four, the thrombus migrates via insufficient perforating veins into the deep system. Several risk factors associated with the development of varicose veins and chronic venous insufficiency or both are older age, female gender, family history, obesity, and a standing occupation. Small Arteriovenous Communications (AVCs) are an important etiology of varicose veins and stasis ulcers of the lower extremities. Hemorrhage from ruptured varicose veins of the legs can occur spontaneously or after a minor trauma. More frequent complications of varicosis include peripheral edema of the ankles, skin ulcers, and varicose eczema. On the contrary, in most forensic practices fatal hemorrhage from rupture of varicosis is a rare event.

The goal of this study is to analyze the importance of inspection and on-site forensic investigations to determine the cause of death when the crime scene is uncertain.

One case of varicose vein rupture is reported. An 80-year-old man was found dead in the bedroom of his apartment. Traces of blood were found in the intire room. The body showed typical signs of death due to exsanguination. A large pool of blood was found on the floor. The scene analysis allowed for the evaluation of the presence of small spatters of blood on the back of the left foot. An external examination of the victim showed a circular lesion linked to subcutaneous arteriovenous anastomoses. Blood spatter investigations and circumstantial data allowed for the detection of the cause of the breaking of the ulcer. In fact, the sock worn by the victim presented a circular blood crust that served as a "cap" on the skin lesion (ulcer).

Analysis of the collected data showed that the elderly man, removing the sock, tore out the crust (cap) from the lesion when removing the sock. Other traumatic lesions were not found. In particular, blood stain pattern analysis was performed in order to understand the origin and the location of venous and/or arterial bleeding. However, blood projected from ruptured varicose veins of the lower limbs may also result in a similar pattern of projected, disseminated fine bloodstains.

In this case, the cause of the hemorrhage was a small lesion of the skin of the left lower leg of the victim, linked to a small arteriovenous communication. At first sight, fatal hemorrhage, with massive traces of blood, may associate the death scene to a crime, with focus primarily on a non-natural death. This case demonstrated the central role of crime scene investigation in these cases. Further, this study showed the fundamental role of prevention in cases of varicose vein disease through adequate treatments.

Hemorrhage, BPA, Varicose Vein