



E90 “Giant” Aneurysm of the Right Coronary Artery—The “Fortuitous Event” in Road Traffic: The Relevance of the Judicial Autopsy

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Learning Overview: A “fortuitous event” is seen as a circumstance precluding “wrongfulness” or providing exoneration from responsibility in wrongful acts. The goal of this presentation is to report on a unusual case in which the death of a cyclist victim of a road accident was not attributable to the injurious consequences of the collision with the vehicle involved, but to a thrombosed giant right coronary artery aneurysm leading to a sudden natural death.

Impact on the Forensic Science Community: This presentation will impact the forensic science community by underlining the importance of the judicial autopsy in the event of a traffic accident fatality in order to verify the existence of a causal relationship between the accident and the death, which can lead to the recognition, or the exclusion, of any liability.

A 73-year-old man riding his bicycle was involved in a car accident, being hit by a truck. Upon arrival of the ambulance, the man was declared dead. Since there were no witnesses, the dynamic of the accident was unclear. The external examination itself, disposed by the prosecutor, showed few abrasions and lacerated/contused wounds in the right parieto-occipital region and in the left parietal region of the head, not allowing the identification of the cause of the death. Therefore a judicial autopsy was performed, which disclosed a large, tumor-like, sacular-shaped aneurysm of the right coronary artery measuring approximately 3.5cm in diameter. The internal wall of the aneurysm was covered with old thrombotic material, and the remaining lumen was obliterated by freshly clotted blood. The heart appeared dilated and weighed 530g, characterized by degenerative valvulopathy. There was significant atherosclerosis in the aorta and the large arteries, but no other aneurysms were found. Examination of the remaining internal organs revealed no other significant pathological conditions. No skull fractures nor encephalic injuries were found. The aneurysm was embedded for histology, and paraffin sections were stained with hematoxylin and eosin. Histological examination confirmed the different ages of the layers of thrombotic material. The vessel wall of the aneurysm was thinned and hyalinized with focal calcifications. Based on the detailed postmortem examination and the histopathological study of tissues, the cause of death was attributed to a thrombosed giant right coronary artery aneurysm.

Aneurysmal Coronary Artery Disease (CAD) is an abnormal dilatation of a localized or diffuse segment of the coronary artery tree. The incidence of coronary aneurysm among CAD is about 1.5% to 5%. A coronary artery aneurysm with a diameter of >2cm, which is termed a “giant aneurysm,” is even more rare. It may be congenital, or secondary to other diseases, such as atherosclerosis. Coronary artery aneurysms may exist without symptoms until a fatal event occurs.

A more common complication is thrombosis in the area of the aneurysm resulting from an alteration of blood flow or a defective endothelial layer. In case of complete luminal obstruction or when parts of the thrombus are embolized in more distant branches of the coronary artery system, acute myocardial infarction is almost inevitable. Thrombosis of the aneurysm and consecutive myocardial infarction was also responsible for death in the present case, which is remarkable for several reasons.

Primarily, the importance of judicial autopsy in the forensic medical diagnosis of death following a traffic accident emerges, and postmortem examination should always be performed, especially when there is the involvement of elderly subjects. Moreover, in road accidents characterized by modest impairment or low-speed dynamics, it is always necessary to identify the cause of the death and whether the people involved in the accident had any diseases that might be the responsible for a sudden natural death instead of a traumatic one, leading to the solution of crucial medicolegal problems.

Giant Aneurysm, Fortuitous Event, Judicial Autopsy