

ECTOPIC HIGH ORIGIN OF A CORONARY ARTERY FROM THE AORTA - A POSSIBLE CAUSE OF SUDDEN DEATH

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Summary: Congenital anomalies originating in the coronary arteries are of special interest for forensic specialists. The presented case is a man found dead on the Coast of Marmara Sea. The death was considered to be suspicious and an autopsy was performed. On the macroscopic autopsy, the ostium of the right coronary artery was hole-like, located in a normal position, but the ostium of the left coronary artery was pocket-shaped and located in the left wall of the ascending aorta and above the rim of the sinotubular junction. We describe an asymptomatic, but didactic case with ectopic high origin of the left coronary artery.

Key words: *Ectopic coronary; Death; Forensic autopsy*

Introduction

A congenital origin of coronary artery anomalies are of special interest for forensic specialists because anomalous origins of the coronary arteries often increase the risk of sudden death (1, 2, 3, 4, 5, 6, 8, 9). Ectopic high origin of coronary arteries has been defined as having ostia originating above the supra-ventricular ridge-sinotubular junction (1-4). We report here is an asymptomatic but interesting case of sudden death with ectopic high origin of the left coronary artery.

Case report

The death certificate showed that the victim was found dead on the coast of the Marmara Sea after a boating accident while fishing with friends. The death was considered to be suspicious by the prosecutor and an autopsy was mandated. The case was a 51-year-old cadaver; he was 168 cm tall and weighed 90 kg. Family members and friends explained that he was a healthy individual and he had never been medically treated. On inspection, there were no specific traumatic findings. Macroscopic and microscopic examination of both lungs showed intensive edema; the right lung weighed 960 g, left lung weighed 790 gr. The pericardium was normal in dissection; the heart weighed 430 g, grossly normal in appearance. The ostium of the right coronary artery was hole-like, located in a normal position (Fig. 1). The ostium of the left coronary artery was pocket-shaped with a diameter of 8 mm located in the high origin

of the left wall of the ascending aorta 18 mm above the rim of the sinotubular junction, originating at a 45° angle, coursing left and downward as far as its division in the two large branches. Ten sections from the heart were evaluated; histopathological investigation revealed no findings of acute and chronic myocardial ischemia, only mild hypertrophy was observed. Blood, urine and organ specimen analysis revealed none of the substances screened for in systematic toxicological methods. Death was reported as accidental drowning. Investigation of coronary artery anomalies in autopsies is of great importance for understanding sudden death cases from a medicolegal aspect.

Discussion

Anomalies originating in the coronary arteries are of special interest for forensic specialists because some of them may cause heart disease in patients and increase the risk of sudden death during exertion and normal activities (1-9). Ectopic high origin of coronary arteries has been defined as having ostium originating more than 5 mm above the supra-ventricular ridge (3, 4), or 10 mm above the sinotubular junction (1, 2). In our case, the left coronary artery ostium was pocket-shaped with a diameter of 8 mm at its largest and located in the left aortic wall of the ascending aorta 18 mm above the rim of the sinotubular junction originating at an acute 45° angle, whereas the right artery was hole-like shaped and located in a normal position. Some authors have stated that an ectopic high location of the ostium of the coronary artery decreases the coronary perfu-

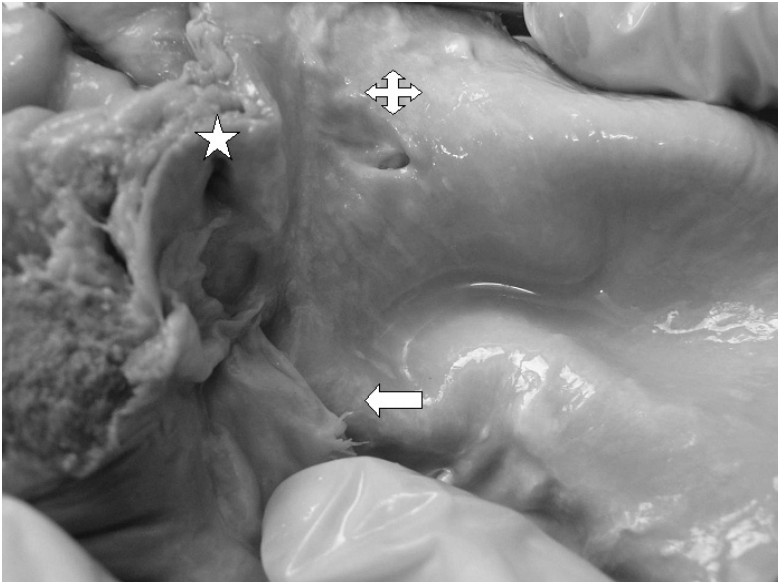


Fig. 1: A four-way arrow pointing the ostium of the left coronary artery, a star pointing to the ostium of the right coronary artery, an arrow pointing to the aortic valves.

sion, which on the other hand is also related to the angle at which the coronary artery leaves the aorta (4); in our case, however, there was no evidence of myocardial ischemia. The acute angle at which the anomalous artery leaves the aorta results in a flap-like mechanism at the coronary ostium. Some authors have mentioned that in acute high ectopic origins of the coronary artery, increase in blood flow during exercise made the artery pull the upper border of the aortic wall, and push the lower border upward, resulting in transient flow impairment of the anomalous ectopic coronary artery (2, 3, 6, 9). In the described case the large diameter of the coronary ostium supplied sufficient myocardial perfusion, and in addition there was mild myocardial hypertrophy. The very high origin of the left coronary artery guides it on a course left and downward to where it divides into the two large branches. This can cause compression of the coronary artery in the passage between the aorta and right ventricular outflow, which has been mentioned as a probable cause for cardiac morbidity and mortality (6, 9).

On the other hand Roberts states that patients who survived childhood with anomalous left coronary arteries often had various symptoms such as angina, impaired left ventricular function, myocardial infarction and progressive fatal heart failure.

The same author claims also that anomalous origin and passage of the left coronary artery has been associated with sudden cardiac death during or shortly after exercise (7). Furthermore, this may explain the sudden death in the presented case as a consequence of the common fatal effects of anomalous ectopic coronary arteries and drowning. We described the case of a patient whose left coronary artery rose from the ascending aorta with high takeoff, but without former clinical signs and symptoms of heart disease. We diagnosed the pathology incidentally during the autopsy in a case of accidental drowning. Specification of coronary artery anomalies in autopsies is of great importance for the scientific definition and classification of ectopic coronary arteries

and for the explanation of sudden cardiac death from a medicolegal aspect (5, 7, 8).

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