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Aortic arch blunt injury in front-seat passenger

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SUMMARY
Aortic arch blunt injury has highly lethal nature. Because the physical examination findings are subtle, immediate medical evaluation is very important. The case was a 72-year-old woman. Massive haemorrhage in the left haemotorax, contusion area in the left lung and a traumatic transection of the distal aortic arch was observed during autopsy. We described intersting autopsy case of aortic arch blunt injury.

Keywords: blunt trauma - aortic injury - autopsy

Tupé poranění oblouku aorty u ženy cestující na předním sedadle automobilu

SOUHRN
Tupé poranění oblouku aorty má vysokou mortalitu. Příznaky jsou zpočátku spíše mírné a necharakteristické, a proto je třeba co nejrychleji správně vyhodnotit situaci. Je popisován případ úmrtí ženy stáří 72 let. Během pitvy bylo nalezeno masivní krvácení do levé pohrudniční dutiny, ložisko kontuze levého křídla plicního a traumatické přetržení distální části aortálního oblouku. Jde o zajímavý případ tupého poranění aortálního oblouku.

Klíčová slova: tupé poranění - poranění aorty - pitva

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Aortic arch blunt trauma injury has highly lethal nature in drivers and front-seat passengers of the motor vehicles. Blunt aortic injury is a lethal complication of blunt chest trauma (1,2). Specific signs and symptoms are frequently absent (2). The majority of patients who sustain blunt aortic arch injury die at the scene. The important point of diagnosis is a high clinical suspect. Because the physical examination findings are subtle immediate medical evaluation is very important. According to the document of death, victim died in the public hospital emergency service admitted after traffic accident**.** The death was considered to be suspicious by prosecutor and an autopsy was mandated. Family members explained that at the same day traffic accident occurred; deceased was front- seat passenger of the head-on collision traffic accident. Her relatives also stated that she had no medical history of disease. The case was a 72-year-old woman cadaver; she was 165 cm tall and weighed 65 kg. On external investigation, there were ecchymotic bruises on the face, 6x3.5 cm widespread ecchymosed on right chin, ecchymotic abrasion on right gluteal region were detected. Subcutaneous and intramuscular haemorrhages were observed in the anterior chest wall during autopsy. Massive 1600 ml haemorrhage was observed in the left haemotorax, 3x1.5 cm contusion area was detected in the inferior lobe of the left lung lateral side, during dissection of the chest there was also observed a traumatic transection of the distal aortic arch, which was accompanied with massive bleeding in the surrounding soft tissues. Organ specimens', blood and urine systematic toxicological analysis revealed none of the substances screened for. Macroscopic examination of brain, heart and other internal organs showed paleness. Histopathologic examination of the internal organs revealed paleness. Death was reported as traumatic aortic injury due to blunt trauma after traffic accident.

Blunt aortic injury is a lethal complication of blunt chest trauma (2). Specific signs and symptoms are frequently absent. The majority of patients who sustain blunt aortic injury die at the scene or soon after accident like in the presented case (1–3). Schulman et al. (3) suggested that aortic injuries were traditionally thought to be the result of severe frontal crashes during traffic accidents and also proposed new mechanism that different crash types such as nearside crashes may also be important in aortic injury. The presented case underwent head-on collision traffic accident, as it was also reported for the majority (58 %) of the cases presented in the study of Feczko et al. (2). On the other hand Nikolic et al. (1) claimed that according to results of their research, the mechanisms of thoracic aortic rupture are different for fatally injured drivers and front passengers. For car drivers, researchers claimed that there was simultaneous with both thoracic and abdominal compression due to deceleration of the body at the moment when the driver's body slides forward and flexes across and against the steering wheel, for the front passengers stated that the mechanism is the caudorostral hyperextension of the thoracic aorta at the moment when the body is stopped by a dashboard, but the head continues forward with great velocity: the carotid vessels pull the aortic arch forward at the same time as the intercostal arteries fix the thoracic part

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of the aorta and pull it downwards, similar to the explanation of Feczko et al. (2). As a result for blunt aortic trauma described for many cases in the literature the most often detected localization of blunt trauma was isthmus laceration (2), but in the presented case distal aortic arch. In the medical literature the statistically significant concomitant injured organs and body regions with the aortic ruptures were the liver, the sternum, and the diaphragm (1), in our case subcutaneous and intramuscular haemorrhages in the anterior chest wall, contusion area in the inferior lobe of the left lung were detected. The incidence of blunt aortic injury in fatal motor vehicle crashes has not decreased during the past decade, but there was recorded trend toward decreased frontal impacts in fatal motor vehicle crashes associated with aortic injuries. It was underlined also that nearside crash mechanism has prominent role in aortic injury (3). Specific signs are frequently absent in the cases with aortic arch blunt injury. The majority of patients who sustain blunt aortic arch injury lost their life's at the accident scene. In this study; we report autopsy case of blunt injury of the arcus aorta.

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