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INTRODUCTION LECTURES

RESULTS

In 69 cases of fatal injury, 130 injuries to the walls of the thoracic aorta were present. In 43 cases (62%) the aorta was damaged in one place; in the other 26 cases (38%) the aorta was damaged in several places simultaneously. We established 61 (47%) incomplete or intramural and 69 (53%) complete or transmural ruptures of the aorta. Morphological changes with blunt injuries to the thoracic aorta were classified into corresponding types and subtypes of the proposed classification. Injuries of type I were established in eight subjects (12%): type IA was established in one case, type IB in three cases, type IC in one case, and type ID in three cases. Morphological changes to the aorta of type II occurred in 35 subjects (50%): type IIA in 24 cases, type IIB in ten cases and type IIC in one case. Multiple ruptures of type III were discovered in 26 cases (38%): type IIIA in five subjects, type IIIB in 13 subjects and type IIIC in eight subjects.

DISCUSSION

Rupture is a synonym for blunt injury to the aortic walls, which means damage to the straight edges that run perpendicular to the axis of the blood vessel. There are two kinds of rupture: incomplete or intramural ruptures that do not go through the whole aortic wall, and complete or transmural ruptures, where the whole wall is ruptured. They are also classified according to the area of circumference they affect, the two categories being partial and total aortic ruptures. Clinical symptoms depend on the site, number and type of blood vessel trauma. At the site of intima injuries (type IA), thrombosis can occur, with possible peripheral embolic complications. An incomplete rupture of the media (type IB) can lead to intramural hematoma, dissection of the aortic walls and the occurrence of late post-traumatic aneurysm. Traumatic pseudoaneurysm (type ID) can occur due to invasion of the blood through the complete rupture of the muscular layer beneath the adventitia that peels and arches the blood vessel wall. A hematoma beneath the adventitia can prevent the outpouring of blood for a short time (type IC). At the sites of intramural injuries, a complete rupture of aortic walls can occur that causes belated clinical symptoms (type IIC). The most common blunt injury to the thoracic aorta in cases of fatal accidents is a partial transmural aortal rupture (type IIA), which causes bleeding into the pericardium, mediastinum and chest. Complete transmural ruptures or transections of the aorta (type IIB) are incompatible with life due to rapid bleeding. Rupture of the aorta usually occurs at one site, while in 30-40% of cases several intra- and/or transmural (multiple, graduated) ruptures of the aorta occur simultaneously (type III A-C), which usually run parallel to each with a distance of 5-25 mm.

CONCLUSIONS

Blunt injuries to the aorta can be classified into three basic types: type I (intramural), type II (transmural) and type III (multiple), and corresponding subtypes. The proposed classification enables a systematic overview of all kinds and forms of blunt injuries to the aortic wall, a more uniform and better discussion, and the comparability of the studies on this medical issue.

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Significance of biochemical parameters obtained by serum analysis post-mortem in determination of cause of death

KEYWORDS: Biochemistry; Post-mortem analysis; Death

The significance of the biochemical parameters determination such us: degradation products - Urea, Creatinine; enzymes - AST, ALT, γ GT, CK, LDH, ALP; electrolytes - Na, K and Ca, as well as Glucose, for the need of the clinical investigation a.i in determination of clinical diagnosis, is well known and it is very well established in the medical science. The motive of this research comes from the need to comprehend the significance of those same parameters in a post mortem serum analysis during expertise investigation, with the purpose to be used as one more argument in precisizing the cause of death and histopathological mechanisms that brought to it, in a correlation with other investigations: pathoanatomical findings, histological analyses and other specific investigations, depending on the specifics of each analyzed case. A total of 22 cases have been analyzed, whose autopsies had been performed at the Institute for Forensic Medicine in Skopje. In 11 of 22 cases a pathoanatomical finding has been determined, that we could objectively expect changes of the investigated biochemical parameters, conditions as pyelonefritis, sepsa, hepatorenal syndrome, infarctus myocardi acuta, as well as one case of chronicle starvation (inanitio marazam); in 9 controlled cases the death occurred momentary or quickly either by traumas, and in 2 of the cases, taken as special controls, death occurred by intoxication. The analyses were performed by specific methods and reagents for separate biochemical parameters on COBAS Integra photometer, biochemical analyzer. The results of this pilot-study that represents the beginning of a larger research, point to selective significance of the separate biochemical parameters which added to pathoanatomical findings (microscopical as well as histological) could be used as a significant evidence in the determination of the cause of death.