Regional differences in aorta of goat (capra hircus).

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Source

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Abstract

Regional differences in the aortic wall are important in explaining the physicomechanical properties and disease distribution in this artery. The goat is a suitable model for studying cardiovascular disease, but the regional features of its aorta are scarcely reported. The purpose of the study was therefore to describe the regional differences in the wall of its aorta. Sixteen healthy adult male domestic goats (capra hircus) were euthanised with intravenous sodium pentabarbitone and specimens obtained from the ascending, arch, each vertebral level of descending thoracic, and various segments of abdominal aorta. The specimens were fixed in 10% formaldehyde solution and routinely processed for paraffin embedding. Seven micron thick sections were stained with Mason's Trichrome and Weigert Resorcin Fuchsin stains. Light microscopic examination revealed that the aortic wall consists of tunica intima comprising endothelium, subendothelial zone and internal elastic lamina, media, and adventitia. Endothelium comprises flat and round endotheliocytes. The population of round cells declines as the internal elastic lamina increases in prominence caudally. Tunica media in ascending, arch, and proximal thoracic aorta comprises two zones: namely a luminal elastic and adventitial musculo-elastic zone, in which muscle islands interrupt some elastic lamellae. These islands progressively diminish caudally until by the eleventh thoracic vertebra they are only patchy. Beyond this point and in the abdominal aorta they are absent and tunica media consists of regular concentric elastic lamellae. Tunica adventitia, on the other hand, increases in thickness and elastic fibre content caudally. Regional variations exist in all three layers of goat aorta. The nature of these differences suggests that they are related to haemodynamic factors. Furthermore, the variations may form the basis for regional differences in physicomechanical strength and disease distribution along the aorta.

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