

Muscle “islands” in the tunica media of the goat thoracic aorta

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Abstract

Muscle islands in tunica media of the aorta may influence its mechanical properties and disease distribution. This study aimed to elucidate their, hitherto undescribed, characteristics in the goat thoracic aorta. Twenty four healthy male domestic goats (*capra hircus*) aged 6 – 24 months were used in the study. The animals were euthanized with sodium pentobarbitone. Samples were taken from the ascending, arch and descending thoracic aorta. 7 μ paraffin embedded sections stained with Mason's Trichrome and Weigert Resorcin Fuchsin/Van Gieson stains were examined by light microscopy for general organization of tunica media. Transmission electron microscopic examination of ultrathin sections stained with uranyl acetate and counterstained with lead citrate was done to study ultrastructure of the muscle islands. Fluorescent histochemical demonstration of adrenergic nerves was done by the sucrose-potassium phosphate-glyoxilic acid (SPG) method. Muscle “islands” were observed to interrupt elastic lamellae of the outer zone of tunica media in proximal aortic segments. These islands were preferentially vascularized and innervated. They comprised interconnected contractile smooth muscle cells linked to connective tissue fibres. These islands probably constitute an auxillary pump which supplements the windkessel function of the elastic lamellae, regulate blood flow and also strengthen the aortic wall.