

anization and adrenergic innervation of the carotid arterial system of the giraffe (*Giraffa camelopardalis*)

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Abstract:

The sympathetic innervation of the giraffe (*Giraffa camelopardalis*) carotid arterial system is described in this study using the sucrose-potassium phosphate-glyoxylic acid (SPG) method. The brachiocephalic and bicarotid trunks showed a paucity of sympathetic innervation. Smooth muscle nests observed in the outer layers of the tunica media in these arteries revealed a rich network of sympathetic nerve fibres. The common carotid artery showed numerous sympathetic nerve fibres particularly in the outer muscular zone of the tunica media. The internal maxillary, ramus anastomoticus, and arteria anastomotica also revealed a rich sympathetic innervation and a deep penetration of the nerve fibres into the tunica media. It is suggested that the rich sympathetic innervation of the giraffe carotid arteries maintains a basal tonic state in the smooth muscle in the tunica media. This, in turn, may enable the animal to maintain a relatively high rate of blood flow in the carotid arteries in diastole despite the pressure run-off. It is further suggested that the muscular structure and dense sympathetic innervation of the internal maxillary and its branches to the carotid rete mirabile provide the animal with an array of mechanisms to modulate its cranial circulation particularly when it bends its head to drink