Rostral ventrolateral medulla

The rostral ventrolateral medulla (RVLM), also known as the pressor area of the medulla, is a region that is responsible for basal and reflex control of sympathetic activity associated with cardiovascular function.

Abnormally elevated sympathetic activity in the RVLM is associated with various cardiovascular diseases, such as heart failure and hypertension.

The RVLM is notably involved in the baroreflex.

It receives inhibitory GABAergic input from the caudal ventrolateral medulla (CVLM). The RVLM is a primary regulator of the sympathetic nervous system; it sends catecholaminergic projections to the sympathetic preganglionic neurons in the intermediolateral nucleus of the spinal cord via reticulospinal tract.

Physostigmine, a choline-esterase inhibitor, elevates endogenous levels of acetylcholine and causes a rise in blood pressure by stimulation of the RVLM.

Orexinergic neurons from the lateral hypothalamus output in the RVLM.

The so-called Cushing reflex has been suggested to explain arterial hypertension. According to this mechanism, hypoperfusion of the rostral ventrolateral medulla induces sympathetic nervous system activation and a pressor response. The pressor response then increases perfusion of a primary brain area regulating sympathetic activity, but in doing so heightens systemic blood pressure. The initial hypoperfusion could arise as a result of narrowed vertebral arteries—evident as high resistance and low flow in these arteries. Although systemic hypertension might lead via remodeling to a narrowing of vertebral arteries, it has been suggested that hypertension is the result of narrowed vertebral arteries rather than the cause [1)].

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DICKINSON CJ, THOMASON AD. Vertebral and internal carotid arteries in relation to hypertension and cerebrovascular disease. Lancet. 1959 Jul 18;2(7090):46-8. PubMed PMID: 13673588.