Cuneiform nucleus

The superior colliculus, cuneiform nucleus, and nucleus sagulum comprise the lateral tegmental system. It may provide important nonauditory input to the medial geniculate body in the thalamus. This input to the thalamus is thought to be excitatory because few, if any, GABAergic neurons in the tegmentum or superior colliculus contribute to the thalamic projections.

The cuneiform nucleus is located in the center of the circuit that mediates autonomic responses to stress. Hemorrhagic hypotension leads to chemoreceptor anoxia, which consequently results in the reduction of baroreceptor discharge and stimulation of the chemoreceptor.

Objective: Using the single-unit recording technique, the neuronal activities of the cuneiform nucleus were investigated in hypotensive states induced by hemorrhage and administration of an anti-hypertensive drug (hydralazine).

Methods: Thirty male rats were divided into the control, hemorrhage, and hydralazine groups. The femoral artery was cannulated for the recording of cardiovascular responses, including systolic blood pressure, mean arterial pressure, and heart rate. Hydralazine was administered via tail vein. The single-unit recording was performed from the cuneiform nucleus.

Results: The maximal systolic blood pressure and the mean arterial pressure significantly decreased and heart rate significantly increased after the application of hydralazine as well as the following hemorrhage compared to the control group. Hypotension significantly increased the firing rate of the cuneiform nucleus in both the hemorrhage and hydralazine groups compared to the control group.

Conclusions: The present data indicate that the cuneiform nucleus activities following hypotension may play a crucial role in blood vessels and vasomotor tone [1)].

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Mohebbati R, Abbassian H, Shafei MN, Gorji A, Negah SS. The alteration of neuronal activities of the cuneiform nucleus in non-hypovolemic and hypovolemic hypotensive conditions. Arq Neuropsiquiatr. 2021 Oct;79(10):871-878. doi: 10.1590/0004-282X-ANP-2020-0549. PMID: 34706016.