

The influence of mechanogastric distension via autonomic nerve on hemodynamic outputs

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The meal presence of carbohydrate, particularly glucose performs a loading of intraduodenal glucose that elicits blood pressure fall; but the gastric distension cooperate counterbalancing this visceral reflex slightly increasing heart rate and blood pressure mainly via orthosympathetic nerves. However in the elderly and in patients with autonomic dysfunction postprandial hypotension, became an important clinical problem [1]. We have previously observed that several hindbrain nuclei are involved in cardiovascular reflexes elicited by mechanogastric dilatation in which vagal parasympathetic and splanchnic sympathetic component participate to define their responses [2,3]. Therefore in the present work monolateral and bilateral vagotomy and splanchnotomy have been performed to assert the involvement of visceral nervous system hindbrain nuclei in hemodynamic control following gastric mechanical dilatation at high and low pressure. The mapping of c-Fos positive neurons have shown the occurrence of cooperative pathways between vagal and splanchnic component in several nuclei under analysis, similarly an integrated response between controlateral areas of single nuclei has been observed. In particular following mechanogastric experimental protocols adopted, the physiological response on blood pressure and heart rate, shows a preponderance effect of orthosympathetic component, but its plain functional expression need of parasympathetic component involvement.

References

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Key words

Gastric distension, blood pressure, mechanogastric reflex, vagus nerve, splanchnic nerve, functional hindbrain nuclei mapping.