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INHIBITORY EFFECT OF CARBOHYDRAZ ON SECRETORY ACTIVITY OF THE PANCREAS

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ABSTRACT

Since the time of Ivan Petrovich Pavlov's work, it is known that the juice collected from the pancreatic fistula, when it is re-introduced into the duodenum, inhibits the secretion of the pancreas. Most recently, in the works of American, French and Japanese physiologists, this inhibition was associated with the fact that trypsinogen secreted in the pancreatic secretion and trypsin contained in the duodenal contents inhibit the release of the hormone cholecystokininpancreosimin by duodenal endocrine cells - a powerful stimulator of enzyme secretion by the pancreas. This explanation of the reverse reproduction of pancreatic secretion from the duodenum is recognized by most experts. In connection with the above, the study of this problem seems to be an urgent task.

KEYWORDS

Pancreatic fistula , duodenal endocrine cell , secretion.

INTRODUCTION

Acute experiments were performed on 10 dogs in 2 series under hexanal anesthesia on controlled breathing. The collection of pancreatic juice was carried out from the main pancreatic duct of the pancreas, the additional duct was ligated. The duodenum was separated from the stomach by a

ligature applied at the site of the pyloric sphincter. In one series of experiments, a catheter was strengthened in the initial part of the duodenum, and in another series, another catheter was strengthened in the ileum. Pancreatic secretion was stimulated by intraduodenally administered hydrolysin acidified to

pH 2.0 (0.6 ml/kg every 15 min). A cannula was inserted into the femoral veins to take blood, a cannula to take blood, and ureters were cannulated to collect urine. After a two-hour collection of juice, urine and blood (in hourly portions), an amylase solution (0.15 mg / kg / hour) was injected into the duodenum, in the next two hours the collection of juice, urine, blood (consequence) was continued, then the cycle was repeated again. The second series of experiments was carried out according to the same scheme, but amylase was injected not into the duodenum, but into the ileum. In the juice collected and accounted for by the volume of hourly periods, bicarbonates (titrometrically), amylase (according to Smith-Roy in the modification of Ugolev), lipase (according to Titz), total proteolytic activity (according to Kunitz), protein (according to Lowry) were determined. Amylase was determined in urine and blood by the same method as in juice. The results obtained in the first B series of experiments showed that intraduodenal administration of amylase causes a significant inhibition of pancreatic secretion of amylase, the secretion of other enzymes and bicarbonates did not undergo changes. When amylase was injected into the ileum at the hour of its administration, no inhibition of pancreatic secretion was observed. Nonselectively generalized inhibition of pancreatic secretion developed after 1-2 hours, it was at this time that hyperamylasuria was also noted. The results obtained indicate the leading role of duodenal mechanisms in

the urgent selective, feedback-based inhibition of pancreatic enzyme secretion. A more delayed non-selective inhibition of pancreatic secretion may be due to the action of enzymes absorbed from the distal parts of the small intestine from the bloodstream.

Indirect evidence of the participation of duodenal peptides in the implementation of inhibitory selective effects of enzymes (amylase) from the duodenum on the secretion of pancreatic hydrolases was also that the secretion stimulated by intraduodenal administration of hydrolysin (that is, endogenous duodenins) is inhibited more pronounced than the secretion stimulated by exogenous secretin with cholecystokinin. The search for specific mechanisms through which inhibition of pancreatic secretion by intraduodenally injected amylase is realized continues. But the experimental data already obtained indicates that the adaptation of enzyme secretion by the pancreas depends more on the enzymatic activity of the duodenal contents.

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