GASTROINTESTINAL HORMONES

Pages with reference to book, From 56 To 56

Digestive function involves motor, secretory and absorptive activities. The main physiologic processes of the alimentary system are influenced by both nervous and hormonal mechanisms.

The three peptides which have been accepted to have hormonal activity are SECRETIN, GASTRIN and CHOLECYSTO-KININ. Being peptides, gastrointestinal hormones are water soluble and circulate unbound to serum proteins in relatively low concentrations.

Mucosa of gastric antrum and duodenum contain cells (G-Cells) which synthesize gastrin and release the hormone into circulation on appropriate stimulation. Gastric acid secretion increases with the rise in the concentration of circulating gastrin. Release of gastrin is inhibited when the hormone producing gastric mucosa is bathed in acid. This feed back inhibition is absent in patients of pernicious anaemia due to achlorhydria (Ber-son and Yalow, 1972). Inadequacy of this mechanism is also observed in the presence of hypergastrinaemia and hyperchlorhydria (Straus, 1978). Factors stimulating the gastrin secretion are feeding (by specific secretogogue action of partially digested proteins and calcium and its buffering effect), gastric distension, Vagal stimulation, and hypercalcaemic states. Reduction in gastrin secretion inhibit the gastrin release.

Determination of fasting gastrin levels using radioimmunoassay helps in differentiating peptic ulcer disease where levels are normal from Zollinger Ellison syndrome where extremely high values are observed. Hypergastrinaemia in gastric ulcers is due to hypo-chlorhydria.

Secretin stimulates pancreatic secretion of water and bicarbonate. Hydrogen ions act as Secretagogues for secretin. Subjects with marked basal hyperchlorhydria also have hypersecretinaemia (Straus and Yalow, 1977). A similar situation has been observed in cases of Zollinger Ellison syndrome.

Cholecystokinin stimulates the gall bladder contraction and pancreatic enzyme secretion. It also augments the biologic activity of secretin and secretin increases its activity(Straus, 1978).

Cholecystokinin is released from small intestine. The stimulants of its release are hydrogen ions, fats and some amino-acids. No clinical disorders are associated with excess or deficiency of this hormone.

Role of gastric inhibitory peptides is not clear but they have enterogastrone like action in dogs (Straus, 1978).

Vasoactive peptides are secreted from gastrointestinal mucosa. They have been incriminated as humoral mediators of Verner- Morrison or pancreatic cholera syndrome, which is characterised by watery diarrhoea, hypokalemia and hypochlorhydria in half the cases, but all the cases of this syndrome have not been proved to be due to excess of vasoactive peptide (Said and Faloona, 1975).

There might still be several yet unidentified gastro-intestinal hormones secreted by gastrointestinal mucosa which may be playing an active role in the normal physiological function of alimentary tract and may also be responsible for certain disease states

References

1. Berson, S.A. and Yalow, R.S. (1972) Radioimmunoassay in gastroenterology. Gastroenterology, 62: 1061.

2. Said, S. and Faloona, G.R. (1975) Elevated Plasma and tissue levels of vasoactive intestinal polypeptide in the watery diarrhoea syndrome due to Pancreatic, bronchogenic and other tumours. N. Eng. J. Med., 292:155.

3. Straus, E. and Yalow, R.S. (1977) Hypersecretinaemia associated with marked basal hyperchlorhydria in man and dog. Gastroenterology, 72:992.

4. Straus, E. (1978) The explosion of gastrointestinal hormones-Their clinical significance. Med. Clin,

N. Amer., 62:21.