RADIOIMMUNOASSAY OF GASTROINTESTINAL HORMONES

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In the recent advance of the investigations about gastrointestinal hormones, the radioimmunoassay systems for many G-I hormones have been developed. In the present paper, some of the characteristics of G-I hormones concerning with their radioimmunoassays will be demonstrated at first. Secondary, characteristic changes of serum G-I hormones measured by radioimmunoassay in ulcerative diseases will be shown.

PART I CHARACTERISTICS OF G-I HORMONES

Most important characteristic of G-I hormones is that their amino-acid components are markedly similar each other. According to the similarity, G-I hormones were divided to some groups so called "gastrin family" and "secretin family". This characteristic is important because it can easily cause the crossreaction in the individual radioimmunoassay systems. For example, antiserum against CCK occasionally crossreacts to gastrin and it is difficult to obtain the specific antiserum for CCK. The other characteristic of G-I hormones is that many hormones are concerning with the phenomena physiologically occurring in the digestive organs. This characteristic may suggest us that the measurement of multiple hormones in the same samples is necessary to clarify the role of G-I hormones in the physiological and pathological states.

PART II CHANGES OF SERUM G-I HORMONES IN ULCERATIVE DISEASES

In one group, venous blood samples were collected at the time 0, 15, 30, 60 and 120 min after the intakes of 200 ml of H2O, 50gr glucose solution and beefsoup and 130 gr of konnyaku from the normals, gastric ulcer patients and duodenal ulcer patients. In the another group, venous blood samples were collected at the same time as first group after the intake of a sandwich and 180 ml of cow milk as a standard meal from normals, duodenal ulcer patients, patients with gastritis erosiva and early gastric cancer type IIc and III.

I Responses of Gastrin

The aqueous stimulations caused different responses according to those compositions and the greatest response was obtained by beefsoup. The solid stimulation (konnyaku) also caused the release of gastrin. But, by these stimulations, no significantly different pattern from normals was obtained in the responses of ulcerative patients. On the other hand, when stimulated by standard meal, markedly higher responses than normals were observed especially in patients with duodenal ulcer and gastritis erosiva. It was interesting that patients with early gastric cancer associated with erosion or ulceration showed almost the same response as gastric erosiva.

II Responses of Secretin

The levels of serum secretin changed by the stimulations in both groups, but the ranges of changes were small and no significant differences were not observed between responses of normals and ulcerative patients.

III Responses of Motilin

In the aqueous stimulations, 200 ml of H2O and beefsoup caused identical bi-phasic increment in normals, although the nutrients included were different. But, in normals, 200 ml of 50 gr glucose solution and konnyaku decreased serum levels of motilin gradually the decrement being maximal at 60 min after intake. When stimulated by later two stimulations, serum motilin was rather increased in ulcerative patients. This tendency was more obvious in duodenal ulcer patients.

IV Conclusion

Acid secretin and gastrointestinal motility are important factors in gastrointestinal pathophysiology. In the present study, standard meal induced hyper-responsiveness of gastrin in duodenal ulcer patients and patients with gastritis erosiva indicating that hyper-secretion of gastric acid exists in these patients. On the other hand, rather weaker stimulations such as glucose or konnyaku caused abnormal increment of serum motilin in ulcerative patients. This evidence may give an explanation for the abnormalities of gastrointestinal motility in ulcerative diseases.