REEVALUATION (IV)

What Is the Dumping Syndrome?

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When the gastrointestinal tract is deprived of its gastric reservoir, as after a subtotal gastric resection, ingested food may enter the jejunum almost immediately and give rise to unpleasant symptoms which constitute the early postprandial dumping syndrome. The incidence of the reaction varies from 0 to 80 per cent in various published series. It has occurred after the Billroth I and Billroth II (Polya and Hofmeister) operations, segmental gastric resection with pyloroplasty, simple gastroenterostomy, and occasionally in individuals with intact gastrointestinal tracts in whom the rate of gastric emptying is very rapid.

MANIFESTATIONS

The manifestations of the syndrome consist of any combination or all of the following: a feeling of weakness, a sensation of warmth, sweating, nausea, fullness, tightness or pain in the epigastrium or left upper quadrant, palpitation, vertigo, and, at times, collapse. They vary in severity and in the degree to which they incapacitate the patient, but he usually has to lie down until they subside, about 30 to 45 minutes. They occur after all meals in some individuals and only after certain ones in others. Most patients complain of symptoms after the heaviest meal of the day, others after breakfast, and still others only after meals containing sweets. They usually make their appearance when the patient resumes feedings postoperatively and may trouble him for weeks or years. Some learn that the avoidance of certain foods, particularly sweets, results in a failure of the manifestations to develop.

Some patients curtail their caloric intakes because the ingestion of food brings on the distress. As a result, they gradually lose

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weight and may develop other evidences of malnutrition, including hypoproteinemia, edema, and stigmata of vitamin deficiency. The symptoms are apt to be worse during periods of increased mental tension and less severe during periods of calm and tranquillity.

Certain objective manifestations have been demonstrated during the period of symptoms induced by the ingestion or introduction of hypertonic solutions of glucose or sucrose into the small intestine. These include hyperglycemia, glycosuria, an elevation in blood pressure (sometimes a fall in blood pressure), tachycardia, and an increase in small-intestinal intraluminal pressure and motor activity. In addition, electrocardiographic changes, a decrease in plasma potassium and phosphate, a decrease in circulating eosinophils, urinary retention of sodium and chloride, an increased urinary excretion of uric acid, and a transient decrease in plasma volume have been reported. Special technics have revealed that when hypertonic solutions of glucose are introduced into the small intestine fluid enters the lumen from the blood stream, representing an attempt by the body to render the solution isotonic, a function which the intact stomach once performed.

MECHANISM

The wide range of phenomena noted during the dumping reaction indicates that many bodily functions and processes are influenced. The mechanism of the reaction has been ascribed to a variety of causes. These include anacidity, gastritis, jejunitis, toxic absorption or absorption of incompletely digested food, hyperglycemia, hypoglycemia and insulin sensitivity, distention of the jejunum by the ingested food, distention of the small intestine by food being digested, a rapid shift in ionically active potassium occurring when ingested glucose is converted into glycogen, a decrease in blood volume, adrenal “solicitation,” allergy to milk, and abnormal blood perfusion of the viscera innervated by the splanchnic nerve, resulting in impairment of the blood supply to the rest of the body, particularly the brain.

OBSERVATIONS and INFERENCES

Whatever mechanism for the production of the manifestations of the dumping syndrome is advanced, it should satisfactorily account for the following:

1. That the reaction can be induced following subtotal gastric