

fundamentals of Clinical Chemistry

Edited by

NORBERT W. TIETZ, Ph.D.

Director of Clinical Chemistry and Professor, Department of Pathology,
University of Kentucky Medical Center, Lexington, Kentucky.
Formerly: Director of Clinical Chemistry, Mount Sinai Hospital Medical Center;
Professor of Clinical Chemistry, Department of Pathology,
The University of Health Sciences/The Chicago Medical School;
Professor of Biochemistry and Pathology, Rush Medical College, Chicago, Illinois.

Editorial Committee:

WENDELL T. CARAWAY, Ph.D.

McLaren General Hospital, Flint, Michigan

ESTHER F. FREIER, M.S., M.T. (ASCP)

University of Minnesota, Minneapolis, Minnesota

JOHN F. KACHMAR, Ph.D.

Rush-Presbyterian-St. Lukes Medical Center, Chicago, Illinois

HOWARD M. RAWNSLEY, M.D.

Dartmouth Medical School, Hanover, New Hampshire

W. B. SAUNDERS COMPANY

Philadelphia London Toronto Mexico City Rio de Janeiro Sydney Tokyo

urine. In patients with malabsorption, oral administration of intrinsic factor will essentially not affect the absorption rate.

The Schilling test is mostly used in studying patients with achlorhydria in whom latent pernicious anemia is suspected but hematologic manifestations have not yet developed. The test is also used to confirm the diagnosis of pernicious anemia.

REFERENCE

Silver, S.: *Radioactive Nuclides in Medicine and Biology*. 3rd ed. Philadelphia, Lea & Febiger, 1968, p. 341.

CONDITIONS ASSOCIATED WITH ABNORMAL GASTRIC FUNCTION

Carcinoma of the stomach

Achlorhydria is found in about 50 per cent of cases; a large portion of the remainder of this group have hypochlorhydria, and only a small percentage have hyperacidity. In some cases, there is blood in the stomach. The lactic acid test is positive in a high percentage of cases. Also, the lactobacillus of Boas-Oppler can frequently be demonstrated.

Gastric ulcers

1
2 In some cases, gastric acidity is high, but in the majority of cases it is normal. Hypoacidity, which is sometimes found, is thought to be due to chronic gastritis. Blood is constantly or intermittently found in many cases, and the same is true for occult blood in the stool. The diagnosis is made chiefly on the basis of the clinical and x-ray findings.

3 Peptic ulcers are associated with an increased secretion rate of gastric HCl. These types of ulcers are rarely found in the stomach but if they occur, they are generally found in the antral region. Peptic ulcers are most often found in the duodenum. (Peptic ulcers, by definition, are produced by gastric juice high in pepsin content and HCl concentration.)

No patient with common peptic ulcer disease has a fasting serum level of gastrin greater than 400 pg/ml.

The variable concentration of gastric secretion in patients with gastric ulcers may be due to the fact that the etiology of the ulcer may be quite variable. The integrity of the gastric mucosa depends on the balance between "attack" and "defense."⁹ In the case of peptic ulcers, the high pepsin concentration in the presence of a high concentration of HCl provides a strong "attack" which may overwhelm the defense (namely, the gastric mucosal area). The nature of the area is not fully elucidated, but it is believed that the apical plasma membrane of the surface epithelial cells plays a major role. It is also believed that this membrane, like all cell membranes, is composed of lipids and thus may be destroyed by substances which disturb the arrangement of lipid layers. Substances which are known to have the ability to penetrate the barrier are detergents such as bile salts and lysolecithin (which may be regurgitated from the duodenum into the stomach), ethanol, aliphatic nonionized acids, eugenol, salicylic acid, and acetylsalicylic acid. If the integrity of the mucosal barrier has been affected, acid may diffuse from the lumen of the stomach back into the mucosa, and sodium ions can diffuse from the mucosa into the lumen.⁹ Such back diffusion can, at least in part, account for low gastric acidity.

Duodenal ulcers

Hyperchlorhydria is observed in more than 70 per cent of cases; however, a small percentage of cases with hypochlorhydria have been reported. Histamine-fast achlorhydria excludes the diagnosis of duodenal ulcer. The volume of gastric secretion is usually increased and may be twice the normal volume. The basal hourly secretion may be more than 200 ml, and the 12 h nocturnal secretion may increase to as much as 5 to 10 liters.

Atropin
Achlorhydria levels

Pernicious
True secretions
anemia pro
Serum
however, v

Pylori

The v
be demon
it frequent
cells, may
gastric cor

Zollin

The 2
or carcino
beta cell (p
of gastrin
BAO is m
to 60 but n
60 per cen
pg/ml.

Emoti

Gastrin
disturbanc
nerves. Co
result in ir

TESTS IN PANCREAS

The p
pancreatic
less and o
24 h secre

A nu
(secretin a
absorption
function a
preting re
similar m
great over
with panc
pancreas.
demonstr