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Evacuation of the Gall Bladder in Patients with Carcinoma of the Stomach.

WALLACE P. RITCHIE and EDWARD A. BOYDEN.

From the Departments of Surgery and Anatomy, University of Minnesota.

This article is the second of a series of 3 studies designed to test the reaction of the human gall bladder to different pathological states of the stomach, *i. e.*, to gastric ulcer, gastric carcinoma and pernicious anemia—diseases in which there are characteristically varying amounts of free hydrochloric acid.

In the first of these¹ it was shown that the gall bladder empties significantly faster in patients with gastric and duodenal ulcers than in normal individuals of comparable age. Although such patients have a high titer of free acid, to which the more rapid emptying of the gall bladder might be attributed, it was found that the curve of emptying in ulcer patients could be duplicated in normal individuals merely by injecting one egg-yolk directly into the duodenum. This would seem to explain the more rapid response of the gall bladder to food in ulcer patients, for it is known that in this disease the hypermotility of the stomach usually results in a greater initial rush of food into the duodenum. Incidentally, these observations remove any apprehension that peptic ulcer may be an antecedent factor in gall bladder disease.

The present report is based upon cholecystographic studies of 22 male patients with carcinoma of the stomach, 13 of them made just prior to gastro-enterostomy or partial resection of the stomach, and 9 of them after one of these operations. In 5 out of the 22 patients (22.7%) the gall bladder failed to visualize, notwithstanding the fact that the dye was administered intravenously. This is a higher negative incidence than occurred in 33 peptic ulcer patients, among whom only 3 (10%) failed to visualize; but this may be explained on the basis of the greater age of the cancer group for, in a previous study,² it was found that out of 23 apparently normal men of the 7th and 8th decade, 5 of them (21.6%) failed to become visualized.

Turning now to the rate of emptying of the gall bladder, it was found that in the 10 untreated cancer patients (9 of whom had an average age of 61 years), the gall bladder discharged 74.1% of its contents in the first 40 minutes after a standard meal of egg-yolk.

¹ Boyden, E. A., and Berman, T. M., *Radiology*, 1937, **28**, 273.

² Boyden, E. A., and Grantham, Jr., S. A., *Surg., Gyn. and Obst.*, 1936, **62**, 34.

This is virtually the same as the mean figure previously ascertained for 14 old men²—namely 73.3%. It would thus appear that cancer of the stomach (unlike peptic ulcer) does not affect the rate of emptying of the gall bladder.

This is the more noteworthy in that histamine tests failed to elicit the presence of free HCl in 6 of these 10 patients and that the others showed only small amounts; from which it may be inferred that free HCl is not essential to normal emptying of the gall bladder.

Similarly, the presence of some degree of retention of gastric contents in 7 of these 10 patients, following a barium meal, suggests that the length of time it takes the stomach to empty is unimportant, from the standpoint of evacuation of gall bladder bile, so long as there is no delay in the initial discharge of food into the duodenum.

Finally, in 6 cancer patients X-rayed after gastro-enterostomy or partial resection of the stomach, it was found that the rate of emptying of the gall bladder was slightly faster than in normal individuals, the mean discharge being 77.7%. While this difference is not statistically significant, conclusions are withheld pending examination of more cases.

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Reactions to the Alcohol-Insoluble Fraction of Ragweed Pollen.

J. Y. FEINSTEIN AND ROBERT E. HOYT. (Introduced by W. P. Larson.)

From the Department of Bacteriology and Immunology, University of Minnesota.

It was shown by Coca and Grove¹ that tryptic digestion of pollen did not destroy its ability to elicit a positive reaction in allergic individuals, although after dialysis no trace of its original nitrogen-content remained. Stull, Cooke and Chobot² found that the active principle of ragweed pollen is present in that fraction which is insoluble in 90-95% alcohol. Black³ by repeated precipitation of ragweed pollen extract in 60% alcohol and redissolving of the precipitate in acid saline, obtained an extract which contained very little nitrogen, and which gave many of the chemical reactions characteristic of

¹ Grove and Coca, *PROC. SOC. EXP. BIOL. AND MED.*, 1923, **21**, 48.

² Stull, Cooke, and Chobot, *J. Allergy*, 1929-30, **1**, 470.

³ Black, J. H., *J. Allergy*, 1931, **2**, 161.