SUMMARY

Since the proper understanding of the relationship between gall bladder infections and diabetes is an important one from the standpoint of the management of such patients, this presentation is offered with the hope of throwing added light on the subject. Detailed observations on twenty-two patients, most of them over a prolonged period of years, have been furnished to show that there is considerable variation in the effects of cholecystic disease on carbohydrate metabolism in different individuals. However, it seems obvious that any disturbance or impairment of liver function as indicated by decreased glucose tolerance represents a definite threat that ultimately the patient may become diabetic. Removal of an infected gall bladder often improves the carbohydrate metabolism in such cases, but it does not always insure that this improvement will be permanent.

A brief resume of the literature on the relationship of cholecystitis and diabetes, including clinical observations, experimental studies and various interpretations of these, has been presented as background and comparison for my own observations and opinion.

REFERENCES

5. Murphy, John B.: Cholecystitis; Symptomatic diabetes mellitus due to gallbladder infection, S. Clin. of John B. Murphy, 2:190, 1913.

THE PROGNOSTIC SIGNIFICANCE OF NOCTURNAL GASTRIC SECRETION IN ULCER PATIENTS

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INTRODUCTION

The purpose of this paper was to determine if any prognostic significance could be attached to the volume and acidity of nocturnal gastric secretion in patients with duodenal ulcer. Work by other investigators has shown that the volume and acidity of nocturnal gastric secretion is generally higher in patients with active duodenal ulcer than in normal controls. Winkelstein (10) performed continuous gastric aspirations during the night on a series of 169 cases in which he showed there was a definite increase in the volume and acidity in active duodenal and gastric ulcer patients compared with normal subjects. Similar results have been obtained by Palmer et al. (1, 3, 4, 5, 6), Dragstedt and coworkers (1, 2, 8), and Val Dez (9).

However, in studies not entirely comparable (sub-
jects were ambulatory ulcer patients with mild symptoms), Sandweiss and his group (7) found that the average volume and acidity of nocturnal gastric secretion was approximately the same in ulcer patients as in normal controls. Therefore, it also became of interest in this study to compare the night secretion in ulcer and normal patients, and to relate the volume and acidity of the secretion to the patients' symptoms.

**Materials and Methods**

This study consists of an analysis of hourly nocturnal gastric secretion in 13 duodenal ulcer patients (20 studies) and 9 non-ulcer patients (9 studies). In addition, continuous 12-hour aspirations were done in 15 duodenal ulcer patients (31 studies) and 6 non-ulcer patients (6 studies), making a total of 28 ulcer patients with 51 aspirations, and 15 non-ulcer patients with 15 aspirations. All of the patients were males, ages ranging from 20 to 55 years. All studies were initiated within 5 days after admission, before there had been any definite clinical improvement.

All of the ulcer patients had clinical symptoms severe enough to cause them to seek hospitalization, and all had definite roentgenologic evidence of duodenal ulcer. Included in the group were both chronic cases with reactivation of symptoms and cases never previously diagnosed.

The non-ulcer patients were all on the gastrointestinal service, having been admitted for a variety of functional complaints. Roentgenologic studies of each of these patients were normal. Three of these patients had symptoms compatible with duodenal ulcer; another had a history of a previously perforated duodenal ulcer. The remainder of the cases were diagnosed as having functional gastro-intestinal disturbances.

The method consisted of passing a Levine tube at 8 p.m., and all gastric contents which were obtained at this time were discarded. The tube was then connected to a continuous suction apparatus, and collecting bottles were replaced every hour until 8 a.m. In those cases where continuous 12-hour aspirations were done, the entire specimen was collected in one bottle.

No patient was allowed anything by mouth after 5:30 p.m., nor were any sedatives or narcotics administered during the period of aspiration. On the day of the procedure, the patients were fed the diet prescribed for them by their ward physician, no effort being made to serve a controlled diet.

In any instance where excessive bile was obtained, the specimen was discarded.

Titration was done according to accepted procedures, using 1/10 N NaOH, with Toepfer's reagent as the indicator.

**Results**

The total 12-hour volume of gastric secretion obtained by continuous suction is shown in Figure 1. It is apparent that the ulcer patients showed definitely greater volumes. In 51 aspirations in the 28 ulcer patients, the volumes were over 600 cubic centimeters in 45 aspirations (23 patients). In the 15 aspirations in the 15 controls, only 5 were above 600 cubic centimeters. Of the 5 controls with a night volume over 600 cubic centimeters, two gave histories typical of duodenal ulcer, but roentgenologic studies were negative. One had a history of perforated ulcer but negative x-rays at the time of this study, and one gave an unconfirmed story of ulcer found by x-ray five years before coming to this hospital. Of the 5 ulcer patients with volumes below 600 cubic centimeters, three in other determinations showed volumes over 600 cubic centimeters.

The total free hydrochloric acid, expressed in milligrams, is shown in Figure 2. In the duodenal ulcer