The usefulness of microscopic bile examination in the evaluation of patients with upper abdominal pain

K. Ramachandra Pai, Alfred J. Augustine, Rajeev Premnath P
Department of General Surgery, Kasturba Medical College, Mangalore, India.

ABSTRACT
Background: Biliary microlithiasis is a collection of cholesterol and calcium bilirubinate crystals and is known to cause biliary colic, acute pancreatitis and acute cholecystitis. In some of these patients biliary microlithiasis has been found.
Objectives: To estimate the incidence of biliary microlithiasis in patients with upper abdominal pain and negative imaging tests.
Methods: A prospective analysis of bile was studied in 50 patients. A positive result was the identification of cholesterol crystals or calcium bilirubinate clumps.
Results: In the 50 patients studied, 7 patients were found to have microlithiasis in bile.
Conclusion: Microscopic examination of bile for biliary microlithiasis is a simple and safe technique and must be done in patients with upper abdominal pain who have normal blood tests, negative imaging tests and normal upper gastrointestinal endoscopy. Biliary microlithiasis is the probable cause of upper abdominal pain in some of these patients.

KEY WORDS
Biliary microlithiasis, Cholesterol crystals, Calcium bilirubinate clumps, Bile microscopy.

INTRODUCTION
Today we see patients who present with upper abdominal pain but with normal blood tests, negative imaging tests and a normal upper gastrointestinal endoscopy. In some of these patients biliary microlithiasis has been found which could be the cause. Biliary sludge has been shown to play a prominent role in the pathogenesis of biliary colic, acute pancreatitis, acute relapsing pancreatitis and cholecystitis for this pain abdomen.1,2

Many investigators have been able to study gallbladder bile by various duodenal intubation methods and the finding of biliary sludge is being investigated. Debates centre on its clinical significance: some believed that it is a transient curiosity, and others believe that it is a precursor to gall stones.

MATERIAL AND METHODS
Fifty consecutive microscopic bile examinations were performed between March 2001 and November 2002. The subject’s pain was located in the epigastric region or right hypochondrium and occurred episodically with variable duration. There was no consistent pattern of pain related to meals or types of food. All patients underwent ultrasonography of the abdomen and an upper gastrointestinal endoscopy. Bile was collected from the second part of the duodenum for examination.

Technique of microscopic examination of bile 1,4
The patients underwent a routine upper gastrointestinal endoscopy and with the scope at the second part of the duodenum, bile was aspirated and collected using a trap connected between the suction apparatus and the endoscope. The bile drainage samples were taken
for examination within 6 hours of collection. The bile samples were centrifuged at 2000 rpm for 10 minutes and the sediment was examined microscopically under high power direct microscopy for the presence of cholesterol crystals and bilirubinate clumps. Cholesterol crystals were recognized typically as thin, transparent square crystals with notched corners or as rhomboid plates. Bilirubinate granules were defined as granular precipitate or as reddish-brown clumps often grossly visible after centrifugation, ranging in colour from yellow through a brick red.

A positive study was regarded as more than two crystals per 100X field or more than four crystals per sample as a positive test result. Micro-photographs showing cholesterol monohydrate crystals and calcium bilirubinate clumps are shown in Figures 1-3.

RESULTS

50 patients were examined in this study between March 2001 and November 2002. All patients in the study gave a history of upper abdominal pain or dyspepsia or vomiting or a combination of these symptoms. Patients ranged from 9 years to 68 years. Mean age of the study group was 37.44 yrs. There were 36 male patients and 14 female patients in the study.

The statistical analysis in the study was done using the Chi-square test. Of the 50 patients examined, 7 patients were found to have microlithiasis in bile. 3 patients had cholelithiasis on ultrasound examination with normal upper gastrointestinal endoscopy. 1 patient had acute relapsing pancreatitis, gallbladder sludge on ultrasound examination and normal upper gastrointestinal endoscopy. 1 patient had normal ultrasound examination but antral gastritis on upper gastrointestinal endoscopy. 2 patients had normal upper gastrointestinal endoscopy and normal ultrasound examination. The findings of the study has been shown in Figure 4.

DISCUSSION

The study group consisted of 36 male and 14 female patients. Biliary microlithiasis was found in 4 males and 3 female subjects in the study. Delchier et al found that majority of patients in his study were males.5

Microscopic bile examination in this study group showed biliary microlithiasis in 2 patients, which
accounted for a rate of 14%.

Morry Moskovitz et al found a rate of 9.5% in their study group of 189 patients over a 5-year period. Juniper and Burson found a rate of 22% in their own series. Delchier et al found a rate of 33% in their study of 46 patients. D. Houssin et al found a rate of 23% in 731 patients. A Gogna et al found a rate of 55% positive bile microscopy in 20 patients.

The accuracy of microscopic bile examination can be improved by the use of Cholecystokinin. This was not used in this study due to its non-availability in India.

CONCLUSIONS

Biliary microlithiasis must be looked for in patients who present with upper abdominal pain with normal blood tests, negative imaging tests and normal upper gastrointestinal endoscopy.

Microscopic examination of bile for biliary microlithiasis is a simple and safe technique and can be done in any medical laboratory without the need for expensive additional equipment. Patients with symptomatic biliary microlithiasis in whom no other cause for pain abdomen has been found may be candidates for cholecystectomy.

REFERENCES