

ORIGINAL PAPERS

## Usefulness of endoscopic ultrasonography in the clinical suspicion of biliary disease

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### ABSTRACT

**Background and aims:** endoscopic ultrasound (EUS) is a very sensitive and specific technique for the diagnosis of biliary diseases. This procedure has proven its usefulness in cases of high suspicion of biliary disease (history of gallstones and dilatation of the intrahepatic and/or extrahepatic bile ducts). We know less about its usefulness in cases of low suspicion of biliary pathology.

The aim of this study was to assess the diagnostic accuracy of EUS in patients with low suspicion of biliary disease (patients with dilatation of the biliary tract were excluded).

**Methods:** 33 patients with low suspicion of biliary disease were recruited in 12 months. All of them had no biliary findings in a previous abdominal ultrasound and computer tomography scan. All of them underwent EUS and were studied prospectively. The diagnosis was confirmed by surgery and/or by ERCP in patients with positive EUS or clinical follow-up in those with normal EUS. Time of follow-up was 9 months (range, 3-12 months).

**Results:** seventeen patients (51.5%) presented with abnormal biliary findings on EUS (7 choledocholithiasis, 3 cholelithiasis, 2 choledocholithiasis + cholelithiasis and 5 microlithiasis).

**Conclusion:** EUS is a useful and safe procedure for diagnosing patients with low suspicion of biliary disease.

**Key words:** EUS. Choledocholithiasis. Cholelithiasis. Microlithiasis.

### BACKGROUND

Endoscopic ultrasonography (EUS) is a very sensitive and specific technique for diagnosing biliary diseases as has been demonstrated in multiple studies (1-4). It has a similar diagnostic accuracy to endoscopic retrograde cholangiopancreatography (ERCP) (or even higher) and to microscopic examination of duodenal bile in the diagnosis of choledocholithiasis (5,6). It is also the indicated procedure for diagnosing microlithiasis. Studies comparing magnetic resonance imaging (MRCP) to EUS in the diagnosis of choledocholithiasis show that both techniques are similar (7-15), although EUS may be more sensitive when small stones are present (12).

It is a safe procedure with a low rate of complications, similar to upper endoscopy (16,17).

Several studies have assessed the risk of choledocholithiasis according to clinical, analytical data, and imaging techniques (18-29) in order to avoid invasive methods and its complications.

Patients with high suspicion of choledocholithiasis (image of stone inside the common duct along with compatible clinical and analytical data) must undergo ERCP (4).

Cases classified as moderate risk are often those with a clear antecedent of biliary disease, dilated bile duct and major analytical alteration. In these patients, it clearly seems that we need a sensitive technique for diagnosing biliary diseases (either USE or MRCP) before performing more invasive techniques (ERCP).

It is unclear the attitude to be followed in patients with low suspicion of choledocholithiasis (right upper quadrant or epigastric pain and/or slight analytical alteration when the conventional image tests are negative). There are many studies about the clinical significance of microlithiasis in acute pancreatitis (30-36) but there is no much information on the detection (and clinical significance) of microlithiasis in patients with suspicion of biliary pain, when the tradi-

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tional imaging techniques are normal. Nevertheless, patients with microlithiasis may develop severe complications as colicky pain, cholecystitis, cholangitis, and acute pancreatitis (37).

In this study we evaluate the usefulness of EUS in patients with low risk for choledocholithiasis, along with those patients without cholecistectomy and suspected biliary disease in which the traditional imaging tests are normal.

Patients with dyspepsia may have other diseases such as chronic pancreatitis or pancreatic tumours that can be diagnosed by EUS (38-44). Although this is not the objective of this study, this must be taken into account when assessing the usefulness of EUS.

## AIMS AND METHODS

The aim of this study was to assess the diagnostic accuracy of EUS in patients with low suspicion of biliary disease (patients with dilatation of the biliary tract were excluded). Patients referred to our department with intermediate or low risk for biliary disease (right upper quadrant or epigastric pain and/or cholestasis in laboratory tests) based on the criteria published by Canto et al. (27) with normal results of abdominal ultrasound and computer tomography (CT) were selected. All of them underwent EUS and were studied prospectively. EUS were performed under conscious sedation by using the EG 3670 URK radial scanning echoendoscope (Pentax).

The diagnosis was confirmed by surgery and/or ERCP in patients with positive EUS or clinical follow-up in those with normal EUS. Time of follow-up was 9 months (3-15 months).

## RESULTS

Thirty-three patients were selected in 12 months. All of them had no biliary findings in a previous abdominal

ultrasound and CT scan (Fig. 1). The average age of these patients was 54 years. Seventeen patients (51.5%) presented with abnormal biliary findings on EUS (7 choledocholithiasis, 3 cholelithiasis, 2 choledocholithiasis + cholelithiasis and 5 microlithiasis). The patients' characteristics are shown in table I. If microlithiasis was excluded, 12 patients (36.6%) had findings on EUS, with a median age of 55 years.

The presence of other diagnoses as chronic pancreatitis (5 patients with 3 or more criteria) was considered as normal for the purpose of classifying patients. There were no other pancreatobiliary diagnoses. There were no endoscopic findings (peptic diseases).

The presence of cholestasis in the laboratory tests was not related to the presence of abnormal findings in the EUS.

The risk of having pathology was higher in the patients without previous cholecistectomy, although there were no differences if patients with microlithiasis were excluded.

All the patients with microlithiasis were women, and none of them had analytical alterations.

The time of follow-up of the patients with choledocholithiasis was 9 months. All of them underwent ERCP with lithiasis extraction, and all of them were asymptomatic at the end of the follow-up.

All the patients with microlithiasis were referred for cholecistectomy. Two of them were free of symptoms after a median of 10 months (6-14). One patient had the same symptoms as before the surgery. The other 2 were lost in the follow-up. There were no complications related to the EUS exploration.

## DISCUSSION

In a high percentage of patients with low risk of biliary disease, EUS is able to detect pathology missed by conventional imaging studies (US, CT). The probability of biliary disease among patients with low risk of choledocholithiasis may be higher than previously reported.

The EUS is a useful and safe method for assessing patients with suspected biliary disease with no findings in other imaging techniques.



Fig. 1.

Table I.

	Abnormal EUS	Normal EUS
Age	53.6 (27-74)	54.8 (32-81)
Women	12	11
Men	3	5
Cholestasis in LT	7	7
No cholestasis in LT	11	8
Cholecystectomy	6	8
No cholecystectomy	11	8

In addition, other pathologies may be diagnosed by EUS (such as chronic pancreatitis or peptic disease) that could be related to the symptoms of these patients.

There is no evidence that microlithiasis can cause right upper quadrant or epigastric pain and/or cholestasis in laboratory tests, but even excluding patients with microlithiasis, the findings are enough to be taken into account.

All the patients with choledocholithiasis detected by the EUS in this study remained free of symptoms after lithiasis extraction. All patients with microlithiasis underwent cholecystectomy, and about half of them had their symptoms resolved at the end of the follow-up. These data show that EUS is able to modify the natural history of the disease in about half of the patients studied.

EUS is usually performed after other conventional techniques as abdominal ultrasound or CT, and often with the only intention of making fine needle aspiration or getting more information of a known lesion. EUS, therefore, has so far been a second-line procedure for the study of patients with pancreatobiliary diseases.

Up until now, this is due to the low availability of technology so far and also to the small number of gastroenterologists trained in this technique. This situation is rapidly changing because the number of EUS devices is increasing, as is doing the number of trained gastroenterologists. This will increase the availability of this technique in coming years.

Another reason for the small number of explorations carried out compared with other procedures is the consideration of the EUS as invasive technique, although as has been already demonstrated, is a safe procedure. It is indicated to perform an upper endoscopy when necessary, though it has a similar rate of complications to the EUS without fine needle aspiration.

The data presented in this study support EUS to be taken into account as a first line exploration in the management of patients with suspected biliary disease.

The EUS also allows exploring the stomach and duodenum to look for peptic pathology. The development of more flexible echoendoscopes will make the endoscopic view very similar to that of the traditional endoscopes.

EUS is a growing demand technique that has low risks and leads to better decision-making in a significant number of patients with different diseases. Therefore, its inclusion in routine clinical practice must be considered (45).

In conclusion, EUS is a useful and safe procedure for diagnosing patients with low suspicion of biliary disease. Further studies with a higher number of patients are needed.

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