due to underlying duct ectasia or chronic breast disease provides a suitable nidus for the deposition of these anaerobes.

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Treatment of biliary duct stones with a terpene preparation

Biliary duct stones are often found in patients who present with gall-bladder disease and are poor surgical risks. Retained stones may persist after cholecystectomy, despite recent developments in non-operative methods of extraction and in-situ litholytic agents. When facilities for endoscopic papillotomy are lacking, reoperation is contraindicated or further procedures refused, and spontaneous passage is unlikely on grounds of stone size, an alternative approach is needed. We used Rowachol (Rowa Ltd, Bantry, Ireland), a monoterpene mixture with cholelitholytic potential.¹

Patients, methods, and results

We treated nine female and two male patients with radiotranslucent ductal stones of a diameter greater than 7 mm and absent, infrequent, or mild symptoms (group 1) and four postoperative patients with retained stones, whose elective reoperations were either refused or considered to be undesirable (group 2). Endoscopic papillotomy was not available at the start of the study. In group 1 three patients had previously undergone cholecystectomy and three had, or developed, non-functioning gall bladders.

Maintenance dosage of Rowachol was with three capsules daily (some patients started at higher doses); symptoms and liver function were monitored six-weekly. Intravenous cholangiography was repeated after six and 12 months.

Treatment was well tolerated, a slightly sore mouth in one case being the only side effect. Results of liver function tests remained normal in six patients and improved in four asymptomatic patients with initially abnormal values. Five patients developed transient abnormalities after attacks of colic or jaundice.

The two male patients were withdrawn, one after five months when surgery was recommended for increasing colic and jaundice, the other after seven months on his death from cardiac infarction. Thirteen patients, all female, took Rowachol for one year or until the stone dissolved, if this was earlier. One of these had bile-duct dilatation and recurrent jaundice; after repeated advice she eventually accepted surgery, but at cholecystectomy no duct stones were found. The table shows details of gall-stone dissolution. One patient is not included because inadequate radiography precluded assessment. Of the four non-responders, two had large calculi after cholecystectomy 30 years previously.

Comment

The results of treating common bile duct stones with Rowachol are encouraging and compare well with published results obtained using bile-acid treatment. The best reported success rate achieved using chenodeoxycholic acid is five out of eight cases (62.5%),² but other series of patients have fared less well. Bateson *et al* had only one success in 10 cases and reported a high incidence of severe symptoms.³ Most of our patients presented with biliary symptoms, but only two required surgery during treatment with Rowachol, which suggests that the antispasmodic properties of the constituent terpenes⁴ may be of value. Rowachol also has the advantages of low cost and virtual absence of side effects. Thus, when other treatments for ductal stones are unacceptable or impracticable and long-term medical treatment is indicated, we suggest that Rowachol should be used, possibly in

combination with small doses of chenic acid, which is our present practice. Such management in no way precludes subsequent definitive treatment by surgery or other methods should this become available or desirable; indeed, two of the patients described above subsequently underwent endoscopic papillotomy.

Response of biliary duct stones to treatment with Rowachol

Duration of treatment	No of patients treated	No with partial dissolution†	No with complete disappearance	Response rate
6 months	13	2	4	6/13 (46%)
12 months	12*	2	6	8/12 (67%)

*Includes patients treated for less than 12 months but until the stones disappeared.

†Reduction in size or number of stones.

The reasons why Rowachol should be more successful in ductal than gall-bladder⁵ disease are not clear. A flushing effect of the cholerisis for which Rowachol is marketed may be contributory.

Full details of the patients and the results of liver function tests are available on request from Dr G D Bell, University Department of Therapeutics, City Hospital, Nottingham NG5 1PD.

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Adjunct to bile-acid treatment for gall-stone dissolution: low-dose chenodeoxycholic acid combined with a terpene preparation

Chenodeoxycholic acid is an established treatment for cholesterol gall stones. Bile is desaturated by reducing the output of cholesterol relative to bile acids; possible mechanisms of action include inhibition of hepatic S-3-hydroxy-3-methylglutaryl coenzyme A reductase (HMGR), the rate-limiting enzyme for cholesterol synthesis.^{1 2}

The recommended dose of chenodeoxycholic acid (15 mg/kg/day) causes diarrhoea in one-third of cases; reduction in dosage may alleviate this problem, but treatment is ineffective in doses of under 500 mg daily.¹ When full dosage is tolerated response rates are poor in obese patients and when stone diameter exceeds 15 mm.² A further serious disadvantage of chenodeoxycholic acid is its cost (over £600 per year for a 70 kg man at 15 mg/kg/day). Adjuvant treatments such as phenobarbitone, β -sitosterol, and restriction of dietary cholesterol have hitherto either failed to increase the efficacy of chenodeoxycholic acid (and thus reduce cost and side effects) or given only marginal benefit.¹

Rowachol (Rowa Ltd, Bantry, Ireland) is a well-tolerated, inexpensive preparation containing six cyclic monoterpenes: it inhibits hepatic HMGR,³ alters biliary cholesterol saturation,⁴ and can dissolve gall stones but is more effective in low than high dosage.^{4 5} This may reflect differences in the effects of individual constituent terpenes on HMGR.³ We report our experience of using Rowachol in combination with a small (and hence on its own probably ineffective)^{1 2} dose of chenodeoxycholic acid in an unselected series of patients with gall stones.