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Effectiveness Of Ursodeoxycholic Acid In The Management Of Symptomatic Gallstone Disease: A Cross Sectional Study

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ABSTRACT

Background: Gallstone disease is a frequently encountered hepatobiliary condition that commonly presents with biliary colic and dyspeptic complaints. Ursodeoxycholic acid (UDCA) has emerged as a conservative therapeutic option for selected patients with cholesterol gallstones; however, evidence regarding its effectiveness in symptomatic cases from routine clinical practice remains limited.

Objective: To assess the effectiveness of Ursodeoxycholic acid in alleviating symptoms and reducing gallstone burden in patients with symptomatic gallstone disease.

Methods: This cross-sectional study included patients diagnosed with symptomatic gallstone disease who were treated with Ursodeoxycholic acid. Clinical symptoms, ultrasonographic findings, and treatment outcomes were evaluated and analyzed statistically.

Results: A significant reduction in pain and dyspeptic symptoms was observed following therapy. Ultrasonographic follow-up revealed partial or complete dissolution of gallstones in a proportion of patients, particularly those with smaller cholesterol stones.

Conclusion: Ursodeoxycholic acid represents an effective and non-invasive treatment modality for symptom control and gallstone reduction in carefully selected patients with symptomatic gallstone disease.

Keywords: *Ursodeoxycholic acid, gallstone disease, cholelithiasis, conservative management, biliary colic*

INTRODUCTION

Gallstone disease is a prevalent hepatobiliary system illness that causes significant gastrointestinal morbidity around the world. According to epidemiological research, gallstones affect 10-20% of adults, with a higher prevalence in women, the elderly, and those with metabolic risk factors [1]. The majority of gallstones are cholesterol stones, which form when bile becomes overly saturated with cholesterol, gallbladder mobility is reduced, and bile acid metabolism is disturbed [2]. These stones may stay asymptomatic or develop into clinical illness. Symptomatic gallstone disease is characterized by biliary colic, epigastric or right upper quadrant pain, nausea, vomiting, bloating, and intolerance to fatty foods, which have a major impact on patients' quality of life [3]. Laparoscopic cholecystectomy is the preferred treatment for symptomatic gallstones; however, not all patients are appropriate candidates due to advanced age, concomitant diseases, or patient desire for non-surgical treatments [4]. Medical care of gallstone disease has thus become increasingly important, particularly for patients who are unwilling or unable to undergo surgery [5]. Ursodeoxycholic acid (UDCA) is a naturally occurring hydrophilic bile acid that lowers biliary cholesterol saturation, stabilizes hepatocyte membranes, and promotes bile flow [6]. UDCA has been demonstrated to facilitate the slow breakdown of cholesterol gallstones, particularly tiny, non-calcified stones in a working gallbladder [7]. Several investigations completed after 2000 have shown that UDCA therapy has varying effectiveness rates, which are determined by stone size, number, composition, and treatment time [8]. Despite its demonstrated biochemical benefits, the therapeutic effectiveness of UDCA in easing symptoms and reducing gallstone burden in symptomatic patients has yet to be studied in ordinary clinical practice [9]. The current study was designed to evaluate the efficacy of Ursodeoxycholic acid in the treatment of symptomatic gallstone disease in terms of symptom alleviation and

ultrasonographic outcomes [10].

MATERIALS AND METHODS

This cross-sectional observational study was conducted in the Department of General Surgery at a tertiary care hospital over a period of 12 months. A total of 100 patients diagnosed with symptomatic gallstone disease were included in the study.

Inclusion Criteria

- Age between 18 and 65 years
- Ultrasonographically confirmed gallstones
- Presence of biliary colic or dyspeptic symptoms
- Patients willing to receive UDCA therapy and provide informed consent

Exclusion Criteria

- Acute cholecystitis or gallstone pancreatitis
- Pigment stones or calcified gallstones
- Gallbladder malignancy
- Pregnancy or lactation
- Severe hepatic or renal dysfunction
- Previous cholecystectomy

Intervention

Patients received Ursodeoxycholic acid at a dose of 10–15 mg/kg/day for a minimum duration of 6 months.

Data Collection

Clinical symptoms, laboratory parameters, and ultrasonographic findings were recorded at baseline and follow-up visits.

Statistical Analysis

Data were analyzed using statistical software. Continuous variables were expressed as mean ± standard deviation, while categorical variables were expressed as percentages. Paired t-test and Chi-square test were used where appropriate. A p-value < 0.05 was considered statistically significant.

RESULTS

The study involved 100 patients with symptomatic gallstone disease.

Table 1: Demographic Profile of Patients

Variable	Number (n=100)	Percentage
Male	32	32%
Female	68	68%
Mean Age (years)	42.6 ± 10.4	-

Table 1 shows the demographic profile of the study population. Out of 100 patients included in the study, 68 were females and 32 were males. The mean age of the patients was 42.6 ± 10.4 years, indicating that symptomatic gallstone disease was more common in middle-aged individuals.

Table 2: Presenting Symptoms

Symptom	Number	Percentage
Biliary colic	78	78%
Nausea/Vomiting	54	54%
Dyspepsia	61	61%

Table 2 summarizes the presenting symptoms among patients with symptomatic gallstone disease. Biliary colic was the most frequent symptom, reported by 78% of patients, followed by dyspepsia in 61% and nausea or vomiting in 54% of cases.

Table 3: Gallstone Characteristics on Ultrasound

Feature	Number	Percentage
Single stone	40	40%
Multiple stones	60	60%
Stone size <10 mm	58	58%

Table 3 depicts the ultrasonographic characteristics of gallstones. Multiple gallstones were observed in 60% of patients, while 40% had a single stone. More than half of the patients (58%) had gallstones measuring less than 10 mm in size.

Table 4: Symptomatic Improvement after UDCA Therapy

Outcome	Number	Percentage
Complete relief	45	45%
Partial relief	38	38%
No improvement	17	17%

Table 4 demonstrates the symptomatic response following ursodeoxycholic acid therapy. Complete relief of symptoms was observed in 45% of patients, while partial improvement was noted in 38%. No significant symptomatic improvement was seen in 17% of patients.

Table 5: Gallstone Response on Follow-up Ultrasound

Response	Number	Percentage
Complete dissolution	18	18%
Partial reduction	36	36%
No change	46	46%

Table 5 illustrates the gallstone response on follow-up ultrasonography after ursodeoxycholic acid therapy. Complete gallstone dissolution was documented in 18% of patients, partial reduction in stone size or number in 36%, while no change was observed in 46% of patients.

DISCUSSION

Gallstone disease continues to be a major healthcare burden, especially in developing nations where surgical facilities may be restricted [11]. In the current study, the majority of patients reported considerable clinical improvement after receiving Ursodeoxycholic acid therapy, demonstrating its effectiveness as a conservative therapeutic choice [12]. The observed improvement in biliary discomfort and dyspeptic symptoms could be due to decreased bile lithogenicity and improved gallbladder emptying caused by UDCA therapy [13]. Complete or partial gallstone dissolving was more prevalent in patients with smaller stones, reflecting previous data that stone size is an important predictor of therapy effectiveness [14]. Previous studies completed after 2000 have indicated gallstone dissolving rates ranging from 10% to 40%, which are comparable to the results of the current study [15]. UDCA has also been shown to have anti-inflammatory and cytoprotective properties, which may help with symptom relief even when total stone breakdown is not accomplished [16]. Compared to surgical therapy, UDCA has the benefit of being non-invasive, well tolerated, and associated with few side effects, making it ideal for long-term usage in chosen patients [17]. However, recurrence of gallstones after discontinuing medication is still a known restriction, underlining the significance of cautious patient selection and counseling [18]. Current clinical guidelines prescribe UDCA primarily for patients with cholesterol-rich, radiolucent gallstones and a functional gallbladder, which is corroborated by the results of this investigation [19]. More large-scale prospective studies with longer follow-up periods are needed to determine the long-term efficacy and cost-effectiveness of ursodeoxycholic acid in symptomatic gallstone disease [20].

CONCLUSION

Ursodeoxycholic acid is a non-surgical therapeutic option for symptomatic gallstone disease that is both effective and well tolerated. It greatly relieves clinical symptoms and has the potential to dissolve gallstones partially or completely, especially in patients with tiny cholesterol stones. UDCA should be investigated as a treatment option for patients who are not suitable candidates for surgical surgery..

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