AAMS General Medicine
ISSN: 2834-7140 (Print) | eISSN: 2834-7141 (Online)
Volume 07, Issue 06, Pages 1-15
DOI: 10.4103/aams.0498
ORIGINAL ARTICLE

children, appendicitis, peritonitis, intestinal obstruction, regional lymphatic antibiotic therapy.

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Received: 2026-04-11 · Accepted: 2026-06-07

Abstract

Background: The study involved 78 children diagnosed with chronic viral hepatitis. The patients were divided into two groups: Group I (36 children) received standard therapy, including conventional hepatoprotectors and choleretic drugs; Group II (42 children) received ursodeoxycholic acid (Ursosan) as a monotherapy at a dose of 1 capsule per day. Comparative biochemical assessments confirmed a distinct positive therapeutic effect of Ursosan monotherapy. In children receiving Ursosan, a statistically significant decrease in biochemical markers of cholestasis, particularly alkaline phosphatase, was observed. The multifaceted beneficial impact of Ursosan on the clinical course of chronic viral hepatitis was demonstrated, supporting its recommendation as a standalone treatment or as a core component of combination therapy.

Keywords: Chronic viral hepatitis, hepatocytes, Ursosan, alkaline phosphatase, total bilirubin.

1. Introduction

Relevance of the Problem. The incidence of chronic viral hepatitis (CVH) remains a critical issue in modern medicine, particularly due to its asymptomatic progression toward severe, advanced stages such as liver cirrhosis (30–70%) and hepatocellular carcinoma (5–30%) [1,2]. In pediatrics, CVH carries unique significance because pathological processes within the liver are frequently overlooked or, in some instances, misdiagnosed during the early stages [3,4,5].

In recent years, numerous clinical trials have confirmed the efficacy and clinical long-term potential of ursodeoxycholic acid (UDCA) in the treatment of chronic hepatitis, establishing its role as a cornerstone in managing medically and socially significant liver diseases. Along with antiviral regimens, the correction of cholestasis plays a vital role in managing chronic hepatitis B and C. Beyond the well-documented direct toxic effects of hydrophobic bile acids on hepatocytes and the biliary epithelium, internal intrahepatic cholestasis acts as a major pathological driver that sustains and prolongs apoptosis. Cholestasis is a consistent feature across all forms of liver pathology, manifesting either with visible clinical jaundice (overt) or in a subclinical (asymptomatic) form [4,5].

Study Objective. Based on these clinical insights, this study aims to evaluate the therapeutic efficacy of Ursosan in children with chronic viral hepatitis.

2. Materials and Methods

A comprehensive medical evaluation was performed on 78 children with chronic viral hepatitis B and C at the Gastroenterology Department of the Samarkand Regional Children's Multidisciplinary Medical

Center. All enrolled children presented in the replicative phase of the disease, accompanied by either overt or subclinical cholestasis. The age of the observed patients ranged from 6 to 18 years.
The patients were divided into two functional groups:
• Group I (n = 36): Received standard therapy, including generally accepted hepatoprotectors and traditional choleretic medications.
• Group II (n = 42): Received ursodeoxycholic acid (Ursosan) as a monotherapy. The medication was administered orally at a weight-based dose of 10–12 mg/kg once daily in the evening before bedtime. The total duration of Ursosan administration was 6 weeks.
Interferon-based medications were completely excluded from the therapeutic protocols of both groups.
In addition to routine clinical and biochemical parameters, the levels and functional baseline activity of total cholesterol (TC), low-density lipoprotein cholesterol (LDL-C), triglycerides (TG), and alkaline phosphatase (ALP) were strictly monitored. All biochemical analyses were performed using an automated biochemical analyzer. The structural dynamics of the liver and biliary tract were evaluated sequentially via ultrasonography (US).

3. Results

An analysis of the research outcomes demonstrates the clinical and biochemical efficacy of Ursosan. When comparing the two groups, dyspeptic symptoms—such as nausea, vomiting, and a feeling of heaviness in the epigastric region—resolved significantly faster in Group II, disappearing within 3.3 ± 0.8 days compared to 6.2 ± 1.1 days in Group I ($P < 0.01$).
Furthermore, a distinct trend toward a reduction in liver size was observed in Group II children within 14.3 ± 2.5 days, whereas this parameter reached comparable levels in Group I only by day 20.5 ± 3.6 ($P < 0.001$). General clinical improvement within the first week of treatment was recorded in 78% of the patients in Group II, compared to a mere 32% in Group I.
Comparative biochemical investigations confirmed the explicit positive impact of using Ursosan as a monotherapy. Specifically, normalization of total bilirubin levels in Group II occurred within 7.7 ± 1.5 days, whereas it took 13.3 ± 2.2 days in Group I ($P < 0.001$).
Prior to therapy, elevated transaminase activity was observed in patients across both groups. Children receiving Ursosan demonstrated positive dynamics by the second week of administration. Accordingly, by week 2, alanine aminotransferase (ALT) levels decreased steadily to 14.3 ± 1.5 U/L in Group II, compared to 16.7 ± 2.2 U/L in Group I. Following the full 6-week course of Ursosan, the ALT level in Group II was 11.3 ± 1.8 U/L, whereas it stood at 13.0 ± 1.8 U/L in Group I.
A highly significant reduction in biochemical markers of cholestasis, particularly alkaline phosphatase, was noted in the Ursosan group. Prior to treatment, baseline ALP levels were 166.33 ± 22.18 U/L and 160.54 ± 32.54 U/L in Groups I and II, respectively. Following therapy, this indicator dropped substantially to 98.15 ± 12.75 U/L in Group II ($P < 0.001$). Conversely, in Group I, ALP levels changed marginally to 150.32 ± 27.74 U/L, showing no statistically significant difference from its baseline value.

4. Discussion

The reduction of alkaline phosphatase in children treated with Ursosan is directly linked to the substitution of toxic bile acids with ursodeoxycholic acid. This process suppresses their absorption in the ileum and reduces their enterohepatic circulation back to the liver. By integrating into the hepatocyte membrane, ursodeoxycholic acid enhances cellular resistance to the damaging, cytolytic effects of toxic bile acids, thereby exerting a robust hepatoprotective effect.
Regarding lipid profile dynamics, the initial concentrations of serum TG, TC, and LDL-C were elevated above normal parameters in both groups. In the Ursosan-treated group, the concentration of triglycerides—the primary component of hepatocellular lipids—decreased by 40.1% from baseline, whereas Group I experienced only a 15.4% reduction ($P < 0.05$). Under the influence of Ursosan therapy, patients in Group II also demonstrated a significant normalization of TC and LDL-C levels relative to their baseline values (by 35.5% and 17.2%, respectively). In Group I, these changes remained statistically negligible, showing a decrease of only 10.4% and 9.8%.
The clear anticholesterolemic effect observed during Ursosan administration may be attributed to its capacity to inhibit the enzymatic activity of hydroxymethylglutaryl-CoA reductase (HMG-CoA reductase) within hepatocytes, alongside a concurrent reduction in intestinal cholesterol absorption.

5. Conclusion

The multifaceted beneficial impact of Ursosan on the clinical and metabolic course of chronic viral hepatitis in children has been fully demonstrated. These findings justify and support the wide recommendation of the drug as an independent background monotherapy, as well as an essential component within complex therapeutic protocols.

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DOI: 10.4103/aams.0498