Extended Abstract

Journal of Neonatal Studies

Hyaluronic Acid as a Serum Marker of Hepatic Fibrosis in Children Chronically Infected with Hepatitis C Virus

Aisha A Sehari
University of Tripoli, Libya

Abstract

Chronic hepatitis C is one of the major causes of liver disease throughout the world; nearly 170 million individuals are affected with the highest prevalence in Egypt. In Libya the prevalence of HCV was found to be 1.6 % among general population. The course and outcome of HCV infection is highly variable, form silent disease to development of cirrhosis and end stage liver disease. Most children with HCV progress to chronic HCV infection. Assessment of hepatic fibrosis is important for determining prognosis, guiding management decisions and monitoring disease. Histological evaluation of liver biopsy is currently considered the reference test for staging hepatic fibrosis. Since liver biopsy carries a small but significant risk; non-invasive methods to assess hepatic fibrosis are desirable. Among the non-invasive methods: serum markers, models and imaging which are easy to perform. Serum markers of fibrosis include, direct markers (ECM) proteins which reflect balance between fibrogenesis and fibrolysis turnover and indirect markers, which reflect alterations in hepatic function. In the present study author's aim is to evaluate the diagnostic utility of hyaluronic acid (HA) in detecting the stage of fibrosis in children chronically infected with HCV. To achieve this goal, 60 chronically HCV infected and 25 healthy children were included in this study. All children were evaluated clinically. CBC, Liver profile, renal functions tests, Cholesterol, hyaluronic acid (HA) and Ultrasound (U/S) were done to all children (Cases and control). Percutaneous ultrasound guided liver biopsies were performed and classified according to Ishak scoring system in HCV infected children only. HCV studied children were divided into two groups; non-significant fibrosis (Stages 0/6, 1/6 and 2/6) and significant fibrosis (Stages 3/6 and 4/6). Statistical analysis of data obtained from the present study showed the following results: Patients and control group were age and sex matched; Only AST and ALT were higher in HCV children than control with significant difference and by using cut-off value of24µg/L one could predict absence or presence of significant fibrosis. Significant fibrosis can be predicted by a HA level of <24µg/l for its presence (PPV of 27.3%) and of <24µg/l for its absence (NPV of 100), with AUC of 0.747.

Introduction

Hepatitis related to hepatitis C virus (HCV) infection is a progressive disease that may result in chronic active hepatitis, cirrhosis, and hepatocellular carcinoma. It is estimated that about 160 million individuals, i.e., 2.35% of the world population, are chronically infected with HCV[1,2]. The virus represents a major global health problem, since there is no available vaccine; and although there are recently approved direct-acting antiviral agents (DAA) available as well as more drugs in development, response to the current standards of care therapy (pegylated interferon-α and ribavirin) is limited. Furthermore, liver failure as a consequence of HCV infection is one of the most common reasons for liver transplantation.

The mechanisms leading to liver injury are under constant revision, but it is widely accepted that both immune system-mediated reactions and viral cytopathic effects are involved in the pathogenesis[3]. A major clinical challenge in the management of the increasing number of chronic hepatitis (CHC) infected patients is achieving the best means for evaluating liver impairment. The assessment of histological activity, namely cell necrosis and inflammation and the degree of liver fibrosis, have to date been provided by liver biopsy[2,4]. The evaluation of the histological damage is considered crucial in the management of patients with CHC, because it provides prognostic information and, in many cases, assists in therapeutic decisions. While the evaluation of fibrosis is a major decision criterion for hepatologists, fibrosis is only one of the many histopathological features present on liver biopsy. In effect, fibrosis is not an independent trait, since scar tissue also results from other pathobiological mechanisms, such as inflammatory, degenerative, and dystrophical processes. The simultaneous evaluation of necroinflammation shows whether fibrosis is the result of a past event that has been stabilized or even regressed or is an ongoing process that may continue to worsen. Moreover, associated lesions, such as steatosis, steatohepatitis, iron overload, etc., which provide useful information for patient management and prognosis, can also frequently be detected within a biopsy[5]. Although the biopsy represents the gold standard for evaluating presence, type, and stage of liver fibrosis and for characterizing necroinflammation inflammation, interface hepatitis, lobular inflammation); it remains a costly and invasive procedure with inherent risks. Minor complications are relative common, and about one fourth of patients have pain in the right upper quadrant or right shoulder after liver biopsy.

Consequently, evaluation of liver damage by means of a biopsy will always carry a risk, albeit low, of misclassification, thus making the term ''best" standard more appropriate than ''gold" standard for liver biopsy. Therefore, developing non-invasive tests that can accurately predict initial disease stage and progression over time represents a high priority and growing medical need[20,21]. Currently, there are several non-invasive diagnostic methods for determining liver damage that are being validated, such as blood markers and imaging methods[22]. Over the last few years, several non-invasive markers were proposed, especially for liver fibrosis diagnosis. Besides the clear advantage of being non-invasive, a more objective interpretation of test results may overcome the mentioned intra- and inter-observer variability of liver biopsy. In addition, these tests can theoretically offer a more accurate view of fibrogenic events occurring in the entire liver, with the advantage of providing frequent fibrosis evaluation without additional risk. However, in general, these tests show low accuracy to discriminate among intermediate stages of fibrosis and may be influenced by several hepatic and extrahepatic conditions.