GASTROENTEROLOGY 2002;123:1364–1366

AMERICAN GASTROENTEROLOGICAL ASSOCIATION

American Gastroenterological Association Medical Position Statement: Evaluation of Liver Chemistry Tests

This document presents the official recommendations of the American Gastroenterological Association (AGA) on the Evaluation of Liver Chemistry Tests. It was approved by the Clinical Practice Committee on March 3, 2002 and by the AGA Governing Board on May 19, 2002.

The widespread availability and use of serum blood chemistries for screening both symptomatic and asymptomatic patients has resulted in a dramatic increase in the number of normal and abnormal liver chemistry tests that must be interpreted by physicians. Therefore, a rational approach for the appropriate evaluation of serum liver chemistries is essential for providing high-quality, cost-effective health care. Although there are no controlled clinical trials examining the optimal approach for evaluating serum liver chemistries, the following guidelines were developed to assist the gastroenterologist and primary care physician by providing them with a rational approach for the interpretation and further diagnostic evaluation of patients with abnormal liver chemistry tests.

Interpretation of Abnormal Liver Chemistry Tests

The range of normal laboratory values for serum biochemical tests is defined as the mean of the distribution ± 2 standard deviations of a presumably representative healthy population. By definition, 2.5% of healthy individuals will therefore have an abnormal elevation of a given liver chemistry test and, in fact, a normal value does not completely exclude the presence of hepatic disease. The interpretation of all abnormal liver chemistries must be taken in the clinical context of a given patient. The initial evaluation of abnormal liver tests includes a detailed history, inventory of medications (including vitamins, herbs, over-the-counter drugs, etc.), and a physical examination. This should include an assessment of the patient's risk factors for liver disease, medications, alcohol consumption, comorbid conditions, and signs and symptoms of hepatic disease. When findings from these indicate that one or more diagnostic considerations are likely, subsequent evaluation should be directed toward establishing these diagnoses, rather than following an algorithm. The algorithm approach is useful mainly when there are no clinical clues or when the suspected diagnosis cannot be verified. An abnormality of a specific serum liver chemistry test must be interpreted in the context of all clinical information and a decision about the need for further diagnostic evaluation and/or the appropriate evaluation can best be made based on the specific clinical scenario of the individual patient.

The evaluation of patients with alanine aminotransferase (ALT) and aspartate aminotransferase (AST) elevations is described in Figure 1. In patients with elevated serum aminotransferases, common hepatic diseases should be excluded with noninvasive serologic tests. If these tests are unremarkable, a decision regarding additional serologic testing versus observation should be based on the clinical scenario. If one elects observation, close clinical follow-up and serial serum liver chemistry testing is essential. If markedly elevated and/or persistent ALT and AST levels are noted, or if significant symptoms or evidence of chronic or decompensated liver disease are present, a more expeditious and complete initial diagnostic evaluation typically is warranted. Similarly, chronic ALT or AST elevations (6 or more months) usually warrant additional serologic and radiologic evaluations and potentially a liver biopsy. Hyperbilirubinemia due to either hepatocellular, cholestatic, or metabolic diseases may occur, but persistent hyperbilirubinemia due to any of these etiologies likely warrants a more expeditious diagnostic evaluation.

Figures 2 and 3 describe guidelines for evaluating patients with evidence of hyperbilirubinemia and cholestasis when serum bilirubin and alkaline phosphatase elevations are in excess of the aminotransferase elevations. Initial evaluations should determine whether the hyperbilirubinemia is conjugated (direct) or unconjugated (indirect). In asymptomatic adult patients with an isolated, mild unconjugated hyperbilirubinemia, the patient should be evaluated for Gilbert's syndrome, hemo-

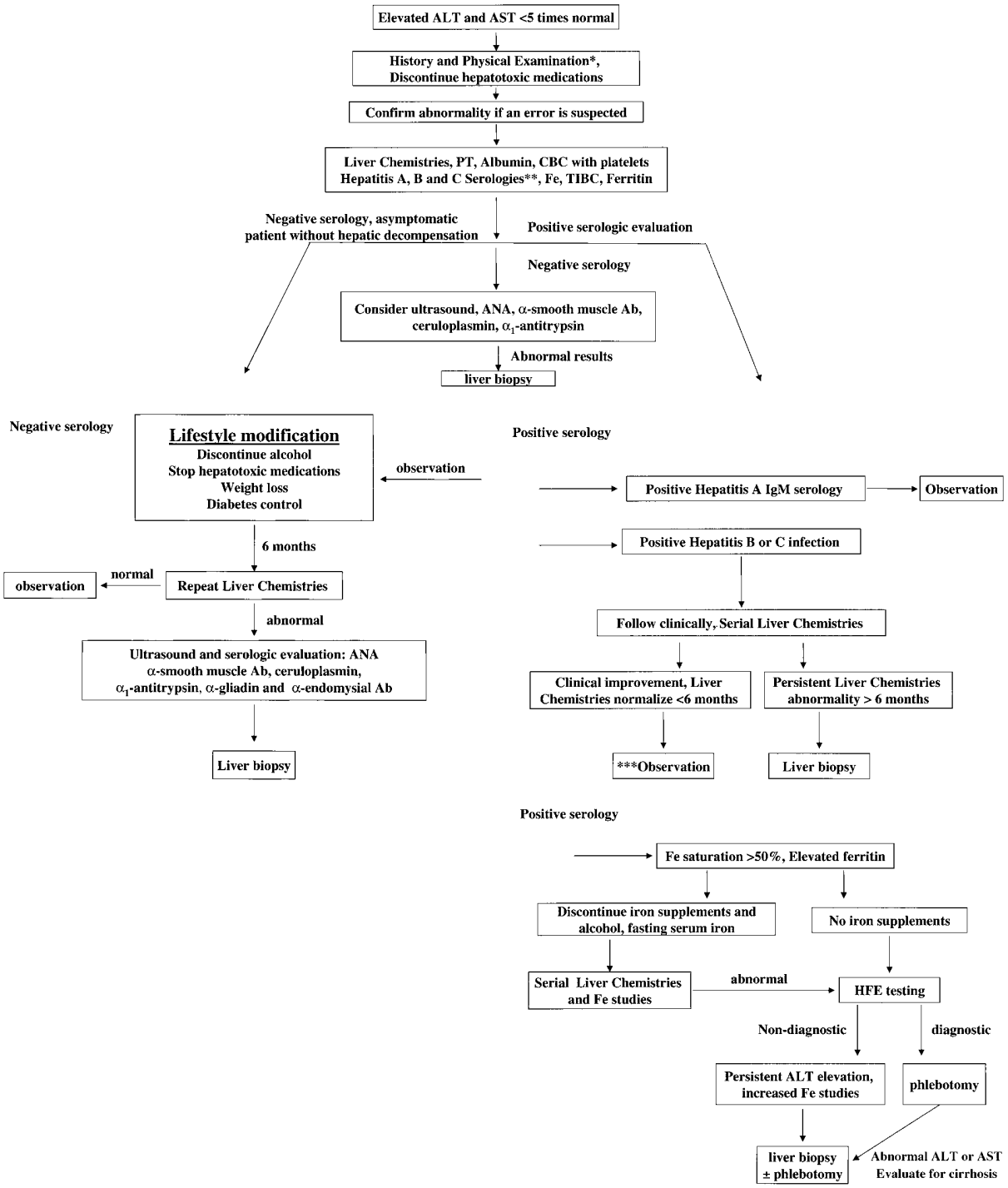

Figure 1. Mild elevations of the serum ALT and AST (less than 5 times normal). Elective radiologic and serologic evaluations should be dependent on the clinical scenario specific to an individual patient. In addition, depending on the clinical scenario, computerized tomography or abdominal magnetic resonance imaging may be preferable to ultrasonography. Patients with more significant elevations of their ALT or AST, with an abnormal albumin or prothrombin time, or with evidence of chronic liver disease and/or hepatic decompensation should typically have more expeditious evaluations. *When findings from these indicate that one or more diagnostic considerations are likely, subsequent evaluation should be directed toward establishing these diagnoses. **HAV-IgM, HBsAg, and Hepatitis B core antibody-IgM fraction (HBcIgM), HCV antibody (consider HCV-RNA). ***Liver biopsy may be considered in patients with chronic HCV viremia and either normal or abnormal serum ALT levels.

lysis, and medication-induced hyperbilirubinemia. If conjugated hyperbilirubinemia is present, the presence of concomitant alkaline phosphatase elevations must be assessed and biliary obstruction should be excluded.

These guidelines serve to provide a rational approach for the interpretation and evaluation of abnormal serum liver chemistries. In asymptomatic or minimally symptomatic patients with mild laboratory abnormalities, unremarkable physical examinations, and intact hepatic function, a reasonable approach may include an initial evaluation for common hepatic diseases, with close clinical follow-up if the initial studies are unrevealing. However, in patients with significant symptoms, evidence of chronic or decompensated liver disease, or severe liver chemistry abnormalities, a complete and expeditious evaluation is essential.

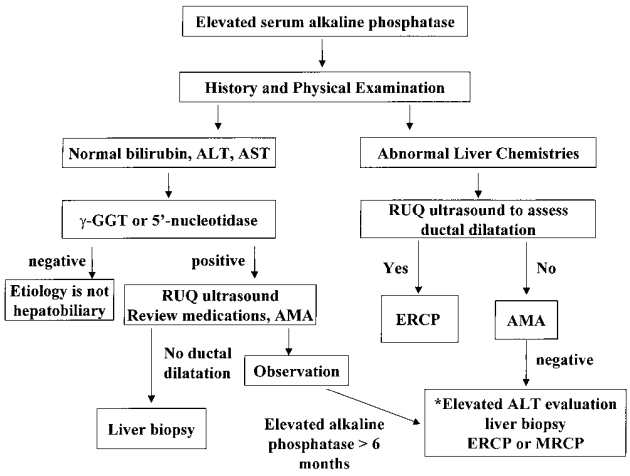

Figure 2. Elevated serum bilirubin. *Elevated ALT evaluation refers to the evaluation outlined in Figure 1.

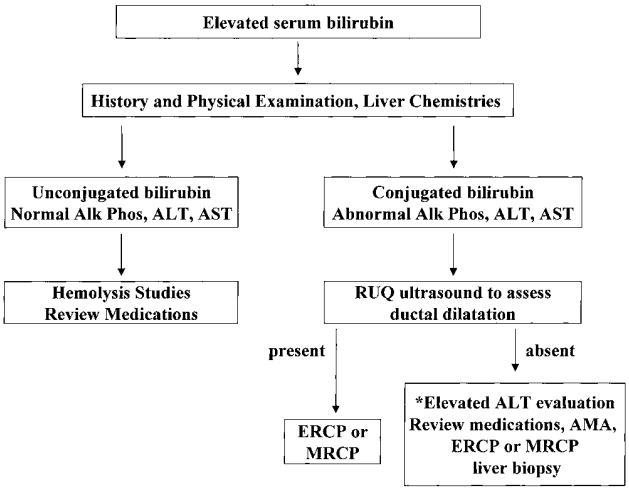

Figure 3. Elevated serum alkaline phosphatase. *Elevated ALT evaluation refers to the evaluation outlined in Figure 1.

Reference

1. Green RM, Flamm S. AGA technical review on the evaluation of liver chemistry tests. Gastroenterology 2002;123:1367–1384.

Address requests for reprints to: Gary R. Lichtenstein, M.D., Chair, Clinical Practice Committee, AGA National Office, c/o Membership Department, 7910 Woodmont Avenue, 7th Floor, Bethesda, Maryland 20814. Fax: (301) 654-5920.

0016-5085/02/$35.00
doi:10.1053/gast.2002.36060