



ASK DR. BOB . . .

with Dr. Bob Frank

Elevated Liver Enzymes

It has been two years since I began writing these articles for FYI. During this time, there have been many new agents and brokers that have become associated with Union Central. I thought this would be a good time to revisit several of my past articles which may not have been read by our new associates and which discussed topics that are extremely important on a daily basis. The first has to do with elevated liver enzymes. Every day underwriters bring to me blood chemistry profiles that contain elevated liver enzymes and want to know what to do.

The liver enzymes are often referred to as liver function tests, but this terminology is not accurate. These tests measure specific liver enzymes that are involved in metabolic processes of the liver, but do not specifically assess liver function. The liver enzymes most commonly checked in blood chemistry profiles by insurance companies include the AST (SGOT), ALT (SGPT), Gamma GT (GGT), and alkaline phosphatase (ALP). The blood chemistry profile also measures serum albumin, and although not a liver enzyme, it is an indirect measurement of liver function. In cases of severe liver disease and damage, the liver's ability to synthesize

albumin is often impaired and thus a low serum albumin level results.

The actual liver enzymes listed above can be elevated in a number of chronic liver diseases. The majority of chronic liver diseases are rare, and include autoimmune liver disease, Wilson's disease, Alpha-1 Antitrypsin deficiency, cryptogenic cirrhosis, primary biliary cirrhosis, sclerosing cholangitis, granulomatous hepatitis, and a variant of fatty liver referred to as non-alcoholic steatohepatitis (NASH). The vast majority of chronic liver diseases seen are caused by four types, with fatty liver being the most common, the second most common being medication induced liver damage (both prescription and non-prescription drugs, especially the non-steroidal anti-inflammatory medications such as Motrin). Next in line regarding frequency would be that of alcoholic liver disease and lastly chronic viral hepatitis. Underwriters can properly underwrite chronic liver disease simply by concentrating on these common diseases, and there are methods for determining which type most likely would be present.

As noted, fatty liver is the most common. Each of these four common liver diseases has a pattern of enzyme elevation that is more likely to suggest one etiology over another. By far the most common causes of fatty liver are obesity and dyslipidemias. It is the frequency of obesity and lipid disturbances in our population that account for the fact that fatty liver is number one in frequency of chronic liver disease.

Fatty liver is a diagnosis of exclusion, in that there is no one test that can definitely diagnose fatty liver. Only a liver biopsy, which is considered to be the gold standard, can definitely diagnose this condition. Chronic viral hepatitis can be diagnosed by the detection of antibodies to hepatitis B and C in the blood profile. Likewise, alcohol abuse may be detected by the use of the specific alcohol marker. Determining

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whether chronic liver disease is related to medication use can be difficult, since no particular test can diagnose definitively this problem. The ongoing use of medicines known to cause liver damage can be strong circumstantial proof that drugs are the culprit. Obviously, stopping the offending drug will cause the liver enzymes to return to normal.

Regarding the specific enzymes themselves, the AST enzyme is found not only in the liver but also in various other tissues of our body. Improperly centrifuged blood specimens and specimens that are more than several days old, can give erroneous results regarding this test. Increases in this enzyme can indicate liver disease or disease in some other part of our body.

The ALT is found in highest concentrations in the liver, and as such is felt to be more specific for liver damage than the AST. However, it is also found in other tissues of our body. This value can also be affected by improper centrifugation of the blood.

The GGT is an enzyme found in the liver and many other tissues of our body. The GGT has been thought of as being a marker for alcohol abuse, but it does have a rather low sensitivity and specificity regarding this. Because the GGT can be elevated in many different types of mild or benign illnesses, many clinicians do not include the GGT in blood profiles they perform. As noted, insurance companies have included GGT in the profile as a marker for alcohol abuse. Although the sensitivity is not ideal, it is still the most sensitive of all liver enzymes regarding alcohol use. However, it can also be elevated by various types of medication and often will be found in high concentrations in obstructive biliary disease, such as gallstones.

The last enzyme is that of the alkaline phosphatase. The ALP is found in liver, and also has high concentrations in our bones. If there is more than a minimal elevation of the alkaline phosphatase, this usually signifies some type of obstructive liver disease or some type of underlying bone disease. Mild elevations of the ALP is seen in the elderly population, and is also elevated with the healing of broken bones, in children who are growing, and in pregnancy.

To briefly summarize, elevations of liver enzymes can be found in a number of chronic liver diseases, but there are four main diseases that cause the vast majority of elevations. None of the liver enzymes are specific for any one disease, and various combinations of elevations can be found not only in liver disease but in a number of other illnesses. The underwriter must look at the pattern of enzyme elevation as well as correlation with the history of the proposed insured, including their medication profile, to make sense of what is going on. Additional testing of the blood specimen can be helpful in diagnosing chronic viral hepatitis and alcohol abuse. Just as the practice of medicine includes applying the principals of science and art of medicine, underwriting elevated liver enzymes also requires the art and science of risk stratification by our underwriters.

Many of these diseases carry a good prognosis. Most cases of fatty liver can be issued standard. Mild elevations caused by medications are usually standard. Even some cases of chronic hepatitis C are insurable (this will be discussed in an upcoming column).

I welcome your comments or questions regarding this article, and I look forward to discussing over the next several months further aspects of liver disease.