Liver To Tell

Doctors analyze POZ publish Sean O. Strub's liver values

May 12, 1995 By Dr. Barbara Starrett and Dr. Richard Novak

Laboratory analyses of blood, which help physicians make diagnoses and detect toxic effects of medications, can also help people with HIV track their health. These pages show the actual lab results of *POZ* Publisher Sean O. Strub. Here, Dr. Barbara Starrett of New York City and Dr. Richard Novak of Chicago comment on the part of Strub's blood work that describes his liver function.

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Dr. Starrett. The liver is an organ responsible for many different functions: Metabolism of proteins, fats and carbohydrates, energy production, synthesis, storage, breakdown and disposal of a wide variety of compounds.

When the blood is tested for a routine chemistry panel, there is a suite of tests that provides information about how the liver is functioning. No single test can measure total liver function because the liver is so complex.

Tests include a number of enzymes, such as alkaline phosphatase, G-glutamyl transpeptiase (GGTP), LDH, SGOT (AST) and SGPT (ALT). Other lab values that assess liver status include the total and direct bilirubins, albumin and prothrombin Time.

Two of the five enzymes measured, the GGTP and ALT, are the most specific for evaluating the liver. ALT usually rises with acute liver cell injury and GGTP rises with more chronic damage. AST is found in heart and skeletal muscle as well as the liver and its changes usually parallel ALT. Alkaline phosphatase is also found in bone and the intestine and LDH is also found in heart an skeletal muscle, the lungs, the brain, tumors and bone marrow. Therefore these elevations in LDH may not be liver-related.

Bilirubin is measured in its direct form and total form. The direct form is the kind that causes jaundice and is more elevated when obstructions in the liver occur. The indirect form goes up when liver cells are injured.

Cholesterol and albumin are manufactured in the liver, and low values can reflect malnutrition and acute or chronic liver injury, as well as problems in other systems. For example, when the ALT and AST are elevated there is liver-ell injury. The hepatitis could be the result of a viral infection, toxic agent, drug, tumor, etc.

When evaluating these blood test results, physicians must play detective in trying to determine the most likely suspect that caused the liver to malfunction. Most important to this process is getting a patient history.

As for Sean, he is HIV positive, asymptomatic except for KS and has a CD4 count of 9. We do not know his previous history of viral hepatitis, nor what prescribed medications or other therapies he takes. His blood work in August 1994 showed no liver abnormalities.

Sean's January blood tests show his ALT at 110 and AST at 141. These results are about two or three times normal. The other liver-function tests are normal, so this elevation is probably acute. Especially since the GGTP is unchanged.

Next, a physician must ask why the ALT and AST are elevated. Possibilities that need to be explored include: A new medication such as INH or a chronic medication like AZT, an early infection in the liver like CMV or MAC, tumor involvement or even lab error.

Only a complete knowledge of the patient and all available options will permit you and your physicians to understand and act upon abnormal liver tests. The two of you should go through all the possibilities. A step-by-step analysis should allow you to determine the correct intervention.

Dr. Novak. Sean's AST and ALT levels are slightly elevated, yet all other enzymes are in the normal range, suggesting that the liver may not be the source of his abnormality [for reasons Dr. Starrett explains above]. What may cause this mild elevation could be as innocuous as an intramuscular injection, or it could reflect an abnormality [for reasons Dr. Starrett explains above]. What may cause this mild elevation could be as innocuous as an intransmuscular injection, or it could reflect an abnormality in the blood cells or bone marrow (MAC, CMV or a long list of other possibilities). The abnormal results could also be from liver damage, but the normal GGTP and alkaline phosphatase levels discount this possibility. However, these blood tests by themselves are not conclusive proof of anything, but merely an aid (and sometimes a hindrance) to diagnosing a problem. These mild enzyme elevations are rather common in PWAs, and I would not pursue any single abnormal value any further in the absence of any symptom, or unless there was a clear trend over time toward progressive elevation of these numbers. They may return to normal in the next reading.

The serum albumin and prothrombin time can serve as actual measures of liver function, since they reflect proteins that are made in the liver. When the liver is working poorly, the serum albumin goes down, and the liver stops making certain coagulation factors—proteins that assist in blood-clot formation, measured in part by prothrombin tie. Again, other conditions can cause these

to be abnormal (such as nutritional status), so all the tests need to be interpreted together. Sean’s are normal.

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