

Approach to Asymptomatic Hypertransaminemia (Liver Enzymes)

Today it is not an uncommon problem to encounter an asymptomatic patient with Hypertransaminemia (raised liver enzymes SGOT/PT/γgt). This is especially true as the routine lab tests are automated and are increasingly becoming part of annual health checkup.

The common causes of chronically raised aminotranamisases include alcohol abuse, drugs, chronic hepatitis B & C, fatty liver, nonalcoholic steatohepatitis and autoimmune hepatitis and congenital metabolic disorders like hemochromatosis, Crohn's disease and alpha AT deficiency.

A minor elevation (< 2 times the normal value) may not be of any clinical relevance in the absence of above-mentioned causes, whereas alkaline phosphates may be elevated physiologically in pregnancy and adolescence.

AMINOTRANSFERASE LEVELS (NORMAL VS ABNORMAL)

Normal ranges of SGOT/ SGPT in blood is 30-40 U/L and these are sensitive of hepatocytic damage. SGPT is primarily located in liver and represents more specifically an injury to the organ as compared to SGOT which is found in decreasing order of concentration in liver, cardiac muscle, skeletal muscle kidneys, lungs, brain etc.

Whenever an abnormal reading of SGOT/SGPT is encountered in blood, the first reaction should be to retest it and further investigation should be carried out to know the cause of abnormality only if abnormality persists.

The evaluation of raised SGOT/SGPT entails a complete history taking and examination as well as relevant diagnostic test as mentioned in the table below.

In different series of asymptomatic individuals with hypertransaminemia the various causes are

56%	Fatty Liver	
20%	NANB Hepatitis	(Non Hepatitis A /B)
11%	Alcohol use	
10%	No cause found	

Various cause of elevated SGOT/SGPT are briefly discussed below.

SPECIFIC CAUSES OF ELEVATED SGOT SGPT/ YGT

a) Alcohol Abuse

Typically the SGOT: SGPT ratio is 2:1. This is primarily due to low level of SGPT due to alcohol related deficiency of pyridoxal-s phosphate. Moreover Gamma GTP is also raised to twice the upper limit of normal. The degree of elevation of SGOT/ PT is not related to degree of damage caused by alcohol.

- b) **Drugs**
A number of drugs are known to cause alteration in SGOT/PT. The initiation of abnormality with introduction of drug and its improvement with withdrawal of drug is most important method of establishing the cause and effect relationship between drug and drug induced liver injury. The common drugs which cause Hypertransaminemia include Isoniazid, Rifampicin, Macrolide antibiotics, anti diabetics, anti epileptics and anti psychotics.
- c) **Chronic Hepatitis**
Hepatitis B and Hepatitis C are most important viral cause of chronic hepatitis. The diagnosis is established by doing virological markers (HbsAg, HbeAg and anti HbeAb) for HBV infection and (anti HCV Ab IgG and HCV RNA) for HCV infection. Subsequent management depends of liver biopsy interpretations followed by antiviral treatment.
- d) **Autoimmune hepatitis**
It typically occurs in young females. It is characterized by hypergammaglobulinemia with presence of antimicrobial antimitochondrial and antismooth muscle antibodies. Finally the diagnosis is confirmed by liver biopsy.
- c) **Fatty liver and nonalcoholic steatophepatitis (NASH)**
Typically the disease occurs in patients with obesity, hyperlipidemia and NIDDM(Non insulin depended diabetics mellitus type II DM) .The SGOT/PT ratio is typically less than 1:1 whereas the fatty liver can be diagnosed by ultrasonography. The diagnosis NASH is made only after demonstration of necroinflammatory lesions on histopathological examination of liver biopsy specimen. Fatty liver in general has benign course while NASH can progress to liver fibrosis and cirrhosis.
- The treatment in general entails weight loss control of diabetes, UDCA and VIT.E. (Vitamin E)
- f) **Metabolic causes**
These include Wilson's disease, alpha AT deficiency and hemochromatosis.

NEED FOR LIVER BIOPSY

A persistent elevation of SGOT/PT 2 times the upper limit of normal after exclusion of above mentioned causes entails liver biopsy to find out the cause of the abnormality. However if the elevation SGOT/PT is <2x, then one should only observe such patient.

CAUSES OF RAISED SERUM ALKALINE PHOSPHATASE (SAP)

Liver, bone and placenta are three important causes of raised SAP. It may be physiologically elevated in pregnancy, adolescent age group and with increasing age. The easiest method to know the source of elevated SAP is to measure Gamma GT as parallel elevation of the latter confirms a liver disorder.

The two most important cause of persistently raised SAP include Cholestatic (Primary Biliary Cirrhosis, primary sclerosing cholangitis, drug induced cholestasis, biliary obstruction and infiltrating disorder (sarcoidosis, tuberculosis, lymphoma, metastatic carcinoma) etc. Surgical obstruction can be confidently ruled out by abdominal ultrasound, whereas the antimitochondrial antibodies will clinch the diagnosis of primary biliary cirrhosis.

Liver biopsy is mandatory if SAP is >50% normal and ERCP/ antimitochondrial Ab levels are not contributory. If SAP is <50% above normal and rest of LFT is normal one can plan observation alone.

CAUSES OF RAISED GAMA GT

Gamma Gt is found in Hepatocytes (Liver cells) and Biliary Epithelial cells (cells lining the bile passages). Gamma GT may be elevated in Pancreatic, Myocardial (Hearts), Renal disease (Kidney), COAD (CHRONIC OBSTRUCTIVE AIRWAY DISEASE- Lungs), NIDDM and Alcoholism. Phenylin and Barbiturates also elevate Gamma GT levels. The reported sensitivity for acute alcohol ingestion varies from 52-94%. A SGOT: SGPT ratio 2:1 with raised Gamma GT confirms alcohol related liver cell injury.

Summary

Because of automation of LFTs and its easy availability as a part of annual check up, an increasing number of asymptomatic individuals are reporting with elevated SGOT/ SGPT. A recommended approach is to first repeat the test and take a detailed history of alcohol ingestion, viral hepatitis and drug ingestion. The pattern of deranged LFT gives a clue to etiology as with raise Gamma GT strongly suggests alcoholic etiology. The viral marker test for viral infection and other specification test for autoimmune disease and metabolic disease are routinely done to establish the cause of deranged LFT.

In patients with 2 times elevation of SGOT / SGPT or 1.5 times elevation of SAP with no obvious cause on routine tests, a liver biopsy is recommended where as if degree of derangement is less than that one can follow expectant treatment with observation alone.

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