

Incidentally detected asymptomatic HBV positive subjects with slightly raised liver alanine amino transferase (alt).

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Abstract

Introduction: One third of world population (Two billion people) has been infected with hepatitis B virus. It is one of the most common infectious diseases among the world's leading cause of death. HBV induced chronic liver disease is also an important precursor for the development of hepatocellular carcinoma even in absence of cirrhosis. Many subjects are unaware of viruses that are the cause of hepatitis except when they have been fully involved by the disease and it has become apparent with significant signs and symptoms.

Objective: To discuss raised liver Alanine amino transferase (ALT) activity in asymptomatic HBV positive subjects.

Methodology: This study was carried out at pathology laboratory Muhammad Medical College Mirpurkhas from January 2015 to July 2016. Total 125 hepatitis B positive asymptomatic subjects were selected and screened out as routine laboratory investigations.

Results: Selected asymptomatic subjects showed normal Reference levels for TB, ALK and GGT. While ALT was raised above reference range.

Conclusion: To give awareness regarding the appropriate measures to reduce the risk in subjects which are asymptomatic and unaware of liver viruses with slightly raised enzyme activity.

Key Words: HBV, ALT, Hepatitis

Introduction:

HBV was first discovered in 1960 as Australia antigen. It is DNA virus that causes hepatitis progressive chronic disease ends into cirrhosis, acute hepatic failure and hepatocellular Carcinoma. The mature HBV is 42 nm, spherical double layered particle. One third of the world population (2 billion people) has been infected with HBV. In our country more than 8% are carriers of HBV. Asymptomatic healthy carrier state is also an important precursor for development of hepatocellular Carcinoma even in absence of Cirrhosis eventually occurs in as many 20%. Incidentally ducted asymptomatic subjects with HBV positive and slightly determines a latent and unaware liver damage which may progress and lead to morbidity and mortality. The carrier state of HBV which has been define as "Healthy" carrier state without symptoms is another condition which may not coincide with the state in which there is latent enzyme activity and liver damage.

Subjects:

This study was carried out at pathology laboratory Mirpurkhas Sindh Pakistan. 125 subjects of both sexes were selected from.

Volunteers or compensatory blood donors.

Patients screened before surgery.

Subjects screened of HBsAg before vaccination of HBV.

During routine laboratory investigations.

Subjects in sense of "Dark Yellow Syndrome" of tropical countries which results from perspiration and dehydration which results to concentrated urines.

Methodology:

Total bilirubin performed on the Jendrassik – Grof method on photometric system. Manufactured by diasys diagnostic system GmbH Germany. Alanine Aminotransferase (ALT) by kinetic method according to the recommendations of expert panel of the IFCC (International Federation of clinical chemistry) without pyridoxal phosphate activation. Manufactured by Human Germany. Alkaline phosphatase (ALK) by "Optimized standard method" according to the recommendations of the German clinical chemistry association. Manufactured Human Germany. Gamma- Glutamyl transferase (GGT) kinetic colorimetric method according to Persijn & Van der silk. Standardized against recommended IFCC (International federation f clinical chemistry) manufactures by Human Germany. All tests performed on Microlab 300 Merck company. HBsAg was performed on Bioline vitro immunochromatography one step assay designed for qualitative determination. For internal quality control, normal and high controls were assayed with samples.

Results:

A total of 125 subjects were studied, among these 86 (66.5 %) were male and 39 (33.5 %) were female. The age of patient ranges from 20 to 58 years and their mean age was (37 + 32), while male to female ratio was 2.2:1

The liver function profile of these subjects showed normal total bilirubin, Alkaline phosphatase and GGT levels, while ALT as slightly raised,

comparative to other age groups it was significantly raised in old groups. Females above 45 years showed increased enzyme activity compare to same age group in male subject.

TABLE 1: distribution of cases according to gender and age.

Age	Sex	
	Male	Female
20 Years to 58 Years	86(66.5%)	39(33.5%)
mean age 37+32	Male to Female ratio 2.2:1	

TABLE 2: Liver function profile in HBV positive asymptomatic subjects.

Parameter	Age Group (years)				
	<20	21-28	29-38	39-48	49-58
TB	0.4+1.5	0.4+2	0.6+1.5	0.7+2.0	0.8+1.6
ALT	48+5.0	50+7	52+6	67+9	86+8.0
ALK	315+8	226+7	182+6	165+8	128+6
GGT	31+7	35+9	38+6	43+8	52+7

TABLE 3: Liver function profile related to the sex in HBV positive asymptomatic subjects

Parameter	Male (66.5 %)	Female (33.5 %)
TB	0.5 ± 2.7	0.6 ± 3.0
ALT	54 ± 16	68 ± 17
ALK	248 ± 13	189 ± 15
GGT	38 ± 7	44 ± 8

Abbreviation:

TB (Total bilirubin),
 ALT (Alani ne Aminotransferase),
 ALK (Alkaline phosphatase),
 GGT (Gama – Glutamyl Transferase)
 Reference Ranges: TB -Adults: 01 - 1.2 mg/dl,
 ALT -Reference value at 37 C-Men 42 U/L, Women 32 U/L
 ALK – Reference value at 37 C Men 80 – 306 U/L, Women 64 – 304 U/L,
 GGT - Reference value at 37 C - Men 11 – 61 U/L, Women 9 – 39 U/L

Defining normal amino transferee’s level:
 The definition of a “Normal” ALT level has been redefined. In a retrospective analysis of 6835 blood donors, Prati and colleagues reported that the normal limit for ALT should be 30 IU/ml for men and 19 IU/ml for women – interpretations of the data included that these lower levels may be more appropriate than current reference laboratory values (when adjusting for factors such as body mass index (BMI) or dyslipidemia). A more recent study assessed ALT levels in 1105 healthy Korean potential liver donors with biopsy proven normal

liver histology, this study found that healthy ALT values were 33 IU/ml for men and 25 IU/ml for women. This Asian study also noted the impact of age, body mass index (BMI) and metabolic factor on ALT levels.

Discussion:

Incidentally detected asymptomatic HBV positive subjects remain largely un predictable to the clinician. Immune tolerant disease is best characterized by high viral replication in setting of minimal liver inflammation and injury and this stage can persists for decades. If it classified as carrier stage then the term so called “healthy carrier” is applied to subject free from symptoms is somewhat confusing, because who harbor the virus have benign progressive liver damage. “Healthy Carrier” is not stable state it may aggravate with co – infection or alteration of immune function. In large series of 317 asymptomatic subjects in Canada, 65 % showed raised ALT, greater than 40 IU/ml. Asymptomatic HBsAg 70 % were with raised ALT and HBsAg positivity in 4 % of asymptomatic carriers. The risk of progression to cirrhosis is although benign in these subjects, but latent infection and liver enzyme activity may progress to stage of fibrosis, necro inflammation, or hepatocellular Carcinoma.

Conclusion: Purpose of this study is to give awareness regarding the appropriate measures to reduce the carrier load in community; proper screening for viruses which affect the liver and those who will be negative should be vaccinated. Safe sex and use of sterilized needles and blood products. No treatment is required for these subjects, but by preventive measures it could be avoided best

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