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Investigation of Blood Biochemical Values of Hepatitis B Seroprevelancia

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`In this study, it was aimed to investigate the blood biochemical values of hepatitis Bseroprevalence in Tatvan region. HBsAg, anti-HBs serologic markers were tested by ELISA Immunoassay (ELISA), ELISA Roche Cobas E411 ELISA and AST ALT enzymes by Beckman Syncron LX20 autoanalyzer.HBsAg seropositivity rate was 14% and Anti-HBs seropositivity rate was 74%. HBsAg positivity was 14.28% in men and 13.51% in women. AST and ALT enzyme averages (47.2 IU / L and 49.7 IU / L) were found in 10 patients with HBsAg (+) group and significantly higher in the 10 healthy control group (25.4 IU / L, 27.6 IU / L) . HBV mark ratios in Tatvan are close to the region and country rates. In addition, AST and ALT liver enzymes were significantly higher in HBV cases.

Keywords:HBV, AST, ALT, Enzymes, Seroprevelance.

Hepatitis is the generic name for systemic infections that affect all asiatic infants, especially those infected with portal infiltration into the parenchyma and common or occasionally with hepatocellular necrosis, resulting in a viral, toxic, pharmacologic agent in the liver or an immunological attack (Berkow, 1987) . Among these factors, viral hepatitis caused by viruses has the largest share. Today, it is known that viral hepatitis occurs with at least 6 different viruses called A, B, C, D, E and G letters. Apart from these, the main meconium is not the liver; Coxsackie, Rubella, Rubeola, Adenovirus, Yellowfruit, Mumps have been determined to cause hepatitis in viruses. Hepatitis B is the most common cause of viral hepatitis worldwide.

Hepatitis B is one of the first 10 diseases that cause death worldwide. It is an important public health problem for many countries, including our country. Hepatitis B-borne chronic hepatitis is considered the most important liver cancer in the world. Hepatitis B has the second most important carcinogenic effect after smoking for humans. About one third of the world's population carries the serological findings of HBV. There are about two billion people infected with hepatitis B in the world and 350 million people are chronically infected. More than 50 million new cases occur each year. Chronic infections have increased the risk of developing liver cirrhosis and liver cancer. Approximately one million people die each year from these complications. Chronic hepatitis caused by HBV is the main cause of hepatocellular carcinoma (HCC) worldwide (Wands J.R, 2001) Hepatitis B as well as all over the world are among the most common infectious

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disease in Turkey as well. Every year 200,000 people are infected and one in three people have passed this infection. Turkey is considered to be carriers of HBV 5-10% of the general population. It is estimated to be about 3-3.5 million people with a rough calculation[3]. Hepatitis form, which is directly transmitted by blood and blood products, was first described by Lurman in 1883 and 1,289 of the flower buds vaccinated in Bremen were found to have jaundice in a period of several weeks to 8 months after vaccination in 191, they are healthy. In Pioneer 1886, Qincke noted the presence of cataractic epidemic forms in 1903 (Güraksýn*et al.,* 1992).

At the beginning of the 20th century, it was accepted that all jaundice was of obstructive origin. McDonald noted in 1908 that infectious hulls were formed by smaller agents than bacteria, and suggested that this agent might be a virüs (Özdemir, 2001).In 1923, Blummer examined 63 hepatitis epidemics that had been seen in the United States for 110 years and today identified some features of hepatitis known as viral hepatitis type A. During the Second World War, the disease was noted as an epidemiological problem in US military units; yellow fever vaccine, the virus has survived in human serum because of the outbreak of hepatitis and military troops have devastated. During this period, Vogt claimed that the infection was caused by a virus, and he reported that the virus was still on in the acute phase of the disease. In 1943 the infectious hepatitis in the United States was referred to as infectious hepatitis, while the UK Ministry of Health reported a memorandum of blood in the same year, jaundice after plasma and serum transfusion, called the "homologous serum hermaphrodite", Mc Callum in 1947, infectious hepatitis hepatitis A "for serum hepatitis and" Hepatitis B "for serum hepatitis. Krugman and colleagues concluded that in the first half of the 1950s and 1950s, the study of disabled children studying at the Willowbroke State School in New York resulted in the following: epidemiologically, clinically and immunologically, two separate hepatitis viruses completely different from each other(Krugman, 1989)

As is the case in the whole world, the first laboratory study on viral hepatitis in our country has been the subject of HBsAg. It is seen that Paykoc, Kýlýçturgay, Mizan and colleagues in Ankara in the beginning of 1970s and Ulagay and colleagues in Istanbul examined HBsAg positivity rates in various groups for the first time using CIE method (Badur, 1994)

The incidence of HBV infection and the common spread of infection; It is changing in different parts of the world. Because of these differences, the world is divided into low, medium and high endemic regions. Criteria such as the positivity rates of HBsAg and anti-HBs in the region, the age of taking the infection and the most frequent transmission of the virus through the infection were taken into account in the classification (Taþyaran, 2007).12% of the world's population lives in these regions. Countries such as U.S., Western and Northern Europe, Australia, Canada, New Zealand enter this group. Most infections occur in adults and at risk groups. Often, sexual contact is transmitted by parenteral contact at a reduced rate. In low-grade endemic regions, the risk of exposure to HBV at any stage of life is less than 20% (Deðertekin, 1997).

HBsAg carrier ratio is 2-7%. 43% of the world's population lives in medium endemic regions with 2-7% HBsAg positivity. Russia, North Africa, Middle East countries, Japan, Eastern Europe, Turkey is also found in the Mediterranean and the countries bordering the Black Sea. Most infections occur in adults and adolescents. The most important way of transmission is the horizontal path. In moderate endemic regions, the risk of lifetime HBV infection is 20-60% for one (Kurt *et al.,* 1989).

A number of studies have been conducted showing that the prevalence of HbsAg in our country in the middle endemic region is 3.9-12.5% and the prevalence of antiHBs is in the range of 20.6-52.3%. Numerous studies have been published in our country to investigate the seroprevalence of HBsAg in diverse groups such as donors, non-donor normal populations, children and risk groups from 1972 to the present day. According to the data obtained from this study, the HBsAg seroprevalence in Turkey, to vary from region to region by ELISA it was determined to be 3.9-12.5%. Values of more than 10% are reported from the Southeastern Anatolia region, especially from Diyarbakýr. These results indicate that we are

in an intermediate endemic region and that there are around 4 million carriers in our country (Ceylan, 1995).

One of the most active groups in HBsAg screening studies is the donors. According to Kayseris Blood Center data, 298,553 donors belonging to Kanda HBsAg positivity rate was 6.7% in 1985 and this ratio decreased gradually in the following years. The Red Crescent Blood Center determined 1.4% HBsAg positivity in 396,141 donors in 1998. According to data from the Ministry of Health in 1998, it worked throughout Turkey 1377688 blood was found positive for HBsAg 1.0% (Mýstýk and Ismail, 2003).

There is a significant difference in the HBV carriers between the regions in our country. Especially in Southeast and Eastern Anatolia, the incidence of HBV infection is higher. It is 4.4% in western regions and 8% in eastern regions. The main reasons for regional differences are low socioeconomic level, inadequate education, crowded and poor living and hygienic conditions, lack of health services and historical characteristics (Yenen, 1996).

Some of the various studies that have been carried out in our country in recent years have been given below.

Seroprevalence of HBsAg was found as 4.82% and anti-HBs seroprevalence was found as 31.25% in the study conducted on 560 patients in Denizli Province (Asan, 2007). In 302 children who applied to Zeynep Kamil Hospital Children's Clinic; HBsAg positivity was 1.0% and anti-HBs positivity was 83.1% (Nalbantoðlu, 2008). At least one of the determinants was found in 912 (52.1%) of 1,750 children who were taken to work to find the seroprevalence of HBV infection in children aged 0-18 years in the province of Istanbul. Since 31.5% of the vaccinated was assessed separately, seropositivity was accepted as 20.6%. Seropositivity increased with age, and it was found that girls had higher positivity than boys (Divrik, 2006).

In this study, it was aimed to examine some blood biochemical values related to hepatitis B seroprevalance in Tatvan.

METHODS

Study design

This prospective investigation was carried out inTatvan State Hospital.This study was performed to investigate the hepatitis B virus markers and some enzyme levels in the general population of Tatvan.In order to investigate the blood levels of 100 blood donors(37 females and 63 males) who applied to Tatvan State Hospital for any reason. The measurements are made by Elisa

Table 1. Distribution of HBV serologic markers by sex

Gender	Number	HBsAg (+) Number	Anti-HBs (+) Number
Men	63	9 (%14.28)	43 (%68.25)
Women	37	5 (%13.51)	31 (%83.78)
Total	100	14 (%14.00)	74 (%74.00)

p> 0.05

Table 2. Distribution of HBV serological markers by age group

Age	Number	HBsAg (+) Number	Anti-HBs (+) Number
0–20	42	2 (%4.76)	36 (%85.71)
21–40	31	8 (%25.80)	16 (%51.61)
41–80	27	4 (%14.81)	22 (%81.48)
Total	100	14 (%14.00)	74 (%74.00)

p< 0.05

Table 3. Distribution of HBV serologic markers by enzymes

Parameters n=10 HBsAg (+)	Control group n=10 HBsAg	(healthy) patient group
AST (IU/L)	25.4 ± 1.21	27.6 ± 4.75
ALT (IU/L)	47.2 ± 2.32	49.7 ± 4.13

p< 0.05

Roche Cobas E411 and Beckman Syncron LX20 autoanalyzer devices.

Blood collection

Blood samples were provided from the person who applied to Tatvan State Hospital for any reason. The blood samples were collected in empty sterile tubes and immediately stored at 4 °C. The serum samples were stored at - 20 °C until the measurements were performed.

Biochemical measurements

The laboratory findings of the samples were examined. Serological markers of HBsAg (Hepatitis B Surface antigen), Anti-HBs (Antibody against Hepatitis B surface antigen) and AST (Aspartate Transaminase) and ALT (Alanine Transaminase) enzyme levels were investigated for blood samples taken for this purpose. In addition, to determine the change of HBV serological markers according to AST and ALT enzymes, a healthy control group of HBsAg (-) ten healthy HBsAg (+) patients with HBsAg ALT enzyme mean values were compared. Blood samples taken from the forearm peripheral veins in accordance with blood collection technique were taken by sterilized injector by authorized health personnel and centrifuged at high speed in serum sterile tubes. Later samples were placed in Elisa and Biochemistry devices and measurements were made. In this study, HBsAg, anti-HBs serologic markers were tested by Enzyme Immunoassay (EIA) Elisa Roche Cobas E411 Elisa and AST ALT enzymes by Beckman Syncron LX20 autoanalyzer.

Statistical Analysis

The findings were evaluated statistically according to age and sex and were shown as schedules. SPSS for Windows 16.0 package program was used to evaluate the data. Mean values were calculated as "arithmetic mean ± standard deviation". Chi-square test was used for intergroup evaluation. Analysis results were evaluated at 95% confidence interval. Statistical significance level was accepted as $p < 0.05$. The results obtained were compared with those of our country.

RESULTS AND DISCUSSION

HBsAg, Anti-HBsAg serologic indications and AST (Aspartate Transaminase) and ALT (alanine transaminase) enzyme values of blood sera from 100 persons, 37 women and 63 men, were found in the following ratios.

DISCUSSION

HBVinfection is as much about community health as it is about the economics of the country. If the economic loss caused by chemotherapeutic agents, chronic hepatitis interferon, and other antiviral treatments in hepatocellular carcinoma is calculated, the prospect of protecting against HBV infection appears strikingly. Moreover, treatment methods are often insufficient to treat the disease (Acar, 2002).

The increasingly prevalent HBV infection is one of the most important of chronic viral diseases. The importance of chronic carriers in primary hepatocellular cancer and cirrhosis preparation, public health and preventive medicine is increasing. For this reason, it is very important to study the proportion of the disease in the society.

The distribution of HBV infection varies according to geographical area. World; low, medium and high endemic regions. HBsAg positivity is 0.1-20% worldwide (Kaygusuz*et all.,* 2003). In our country, HBsAg positivity is found between 1-14.3% to vary from region to region and according to average values, our country is among the middle endemic regions (Bilgiç *et all.,* 1999).

The total seropositivity in various publications in Turkey have reported 25-60% and this rate increases from the East and Southeast Anatolia. According to these results, one in three people in our country are infected with HBV and the general population of the country is 5-10% HBsAg(Balýk, 1994). Since 1972, HBsAg has been screened in various groups in our country(Pasha *et all.,* 2005)

Initially, research in our country was concentrated on risk groups, but then expanded to include the entire community. It wasreported that HBsAg positivity was 7.5% and anti-HBs positivity was 27.5% in the general population in Sivas region (Poyraz *et all.,* 1995). Durmuþ et al.Reported that HBsAg positivity was 8% and anti-HBs positivity was 31.5% in Trabzon (Durmuþ *et all.,* 1996).

In Istanbul, Kuru et al. reported that HBV seroprevalence was 39.6% and HBsAg carriage was 62%(Kuru *et all.,* 1995) In a study conducted

on 560 patients in Denizli Province, the rate of HBsAg was 4.82% and the seroprevalence of anti-HBs was 31.25% (Asan, 2007). In 302 children who applied to Zeynep Kamil Hospital Children's Clinic; HBsAg positivity of 1.0% and anti-HBs positivity of 83.1%(Nalbantoðlu, 2008). In the other study conducted on 8589 people in Isparta province, 2.8% reported HBsAg positivity(Altay, 2007).

In the study conducted between November 2005 and February 2006, Taksim Training and Research Hospital reported 1.5% HBsAg and 17.8% anti-HBs positivity. In our study, these ratios were found as HBsAg% 14.00 anti-HBsAg% 74.00 respectively(Saveci, 2006). Our findings support the literature.

In this study, 37 (37%) women who applied to Tatvan State Hospital for any reason between to get an idea about the hepatitis B virus marker ratios and the altered AST-ALT enzymes in Tatvan province, 63 men were examined. Of the 63 patients, 9 (14.28%) were positive for unda HBsAg and 43 (68.25%) were positive for anti-HBs while 11 were not. Of the 37 women, 5 (13.51%) were positive for indene HBsAg and 31 (83.78%) were positive for anti-HBs, none of them were found.

In the general population, HBsAg seropositivity rate was 14.00% and Anti-HBs seropositivity rate was 74.00%. Furthermore, in the 10-person HBsAg (+) group, the AST enzyme averaged 27.6 ± 4.75 IU / L and the ALT enzyme averaged 49.7 ± 7.13 IU / L. In the control group of 10 patients, these values were found as 25.4 ± 1.21 IU / L and 47.2 ± 2.32 IU / L, respectively ($p<0.05$). When the distribution of HBV in terms of age groups was examined statistically, the positivity of HBsAg and anti-HBs was found to be significant in 0-20 age group ($p> 0.05$). The incidence of low HBsAg (+) and high anti-HBs (+) rates under 20 years of age may be due to the success of the national vaccination program that began in 1998.

When sex distribution HBV distribution was examined, it was found higher in males than females. However, this difference was not statistically significant ($p> 0.05$). When the distribution of serologic findings according to AST and ALT enzyme levels was examined, high enzyme ratios were found significantly ($p <0.05$) compared to those carrying these findings. This condition is naturally indicative of infection-induced liver damage.

CONCLUSIONS

As a result, HBV mark ratios in Tatvan were found to be lower than country rates. No correspondence could be made since there was no other work done in the region in the previous years. As the immunization status of the individuals in our study was not known, no comment could be made as to whether HBsAg positivity rates were the vaccination outcome. In addition, AST and ALT liver enzymes were significantly higher in HBV cases.

The determination of hepatitis B carrier individual rates and the application of preventive health services for them are important for raising awareness of carrier individuals and reducing the spread of virus in the society. To determine the true prevalence in Turkey and well planned to do with the future work on comparative, multi-center, large-scale research should be conducted. Studies should be carried out to increase the knowledge level of the whole society on hepatitis and other blood-borne diseases.

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