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ASSOCIATION BETWEEN ANTIBODY TO HEPATITIS C VIRUS AND HBS Ag IN BLOOD DONORS

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ABSTRACT:

Antigenaemia for HBsAg in 400 blood donors was detected in 45 subjects (11.3%). While anti-HCV was detected in 26 subjects (6.5%). Association of both HBsAg and anti-HCV was found in cases (1.3%). Serum transaminases were higher than normal values in 5 cases who were HBsAg positive and/or anti-HCV positive cases. But this increase did not significantly correlate to the presence of HBsAg or anti-HCV.

INTRODUCTION

Population and occupational groups particularly at risk from B or C hepatitis are blood recipients. Type B hepatitis virus produces unique antigens and antibodies in human blood. by detecting these antigens and antibodies, it is possible not only to diagnose the type of hepatitis, but also to determine the stage of infection and probable prognosis as well (1).

The carrier rate of HBsAg varies worldwide from 0.1-0.2% in Britain, USA and Scandinavia, to more than 3% in Greece and italy and even up to-15% in africa and the Far East (2). In countries where all blood donation is screened for HBsag by very sensitive techniques, more than 90% of post-transfusional hepatitis is caused by C virus (3). Using a recently developed antibody assay for HCV in blood transfusion recipients (13%). So it is concluded that the blood recipients are the highest risk group for HCV infection.

MATERIAL AND METHODS

The present work was carried out on serum samples obtained form 400 blood donors. Blood donors were recruits attending blood bank of ZAGAZIG University Hospital during the period from May to Dec. 1992.

Each serum sample was tested for :

1- Serum transaminases (GOT & GPT) using colorimetric Boehringer Kits.

2- Hepatitis B surface antigen (HBsAg) using Behring Enzygnost HBsAg microplate kits.

100 µL of negative control serum were pipetted into each of four wells in the test plate, then 100 µL of positive control serum into each of next two wells, and 100 uL of each sample into the subsequent wells. Career sealer was applied and the plate was gently tapped. The plate was incubated at 40 C for 1.5 hrs.Career sealer was removed, liquid was aspirated and wells were washed three times with washing solution were pipetted into each well. Cover sealer was applied and the plate was incubated at room temperature for 30 min. avoiding exposure to strong light. Cover sealer was removed and 100 µL of stopping solution were pipetted into each well.

The results were read by Behring ELISA processor II using program no. 7. The presence or absence of HBsAg was determined by comparing the absorbance of the specimen to cut off value (the sum of absorbance values of negative control + variable factor). Samples with absorbance values equal to or above the cutoff value were considered positive.

3- Anti-HCV using ABBOTT HCVEIA and 2nd Generation kits which is qualitative enzyme immunoassay.

200 µL of diluted negative control serum were pipetted into each of three wells in the test plate, then 200 µL of diluted positive control serum into each of next three wells and 200 µL of each diluted sample (10 uL serum sample to 400 ul of specimen diluent) into the subsequent wells. One bead was added to each well containing. Cover sealer was applied and the plate was incubated at 40 C for 30 min. Cover sealer was removed, liquid was aspirated and wells were washed five times with distilled water. Beads were transferred from the reaction wells to probably identified tubes. 30 µL of freshly O phenylene diamine (OPD) substrate were pipetted into empty tube (substrate blank) and then into each tube containing a bead. All tubes were incubated at room temperature for 30 min. and 1 ml of 1 N sulfuric acid was added to each tube.

The results were read using spectrophotometer and determining the absorbance of controls and specimens at 492 nm within two hrs. after addition of acid.

The presence or absence of anti-HCV was determined by comparing the absorbance of the specimen to a cutoff value. Samples with absorbance values equal or greater than the cutoff value were considered positive. Samples with absorbance values less than the cutoff value were considered negative.

RESULTS

The above mentioned tests revealed the following results:

1) 45 cases were positive for HBsAg (11.3%).
2) 26 cases were positive for Anti-HCV (6.5%).

3) 5 cases were positive for both HBsAg and anti-HCV (1.3%).
4) The mean serum transaminase (GOT) values with HB infection were 14.52±3.226 IU/L (range 10-37 IU/L).
5) The serum transaminase (GPT) valus with HB infection were 11.63 ± 5.576 IU/L (range 4-32 IU/L) and values with HCV infection 12.63 ± 6.228 IU/L (range 7-38 IU/L).
6) From 45 blood donors positive for HBsAg, only 15 cases (33%) showed increased GOT & GPT, and from 26 cases positive for anti-HVC, only 5 cases (19%) showed increased GOT & GPT.
7) In subjects who were positive for both HBsAg and anti-HCV, GOT ranged from 7-23 IU/L with a mean value of 13.66 ± 1.826 IU/L while the level of GPT ranged from 8-27 IU/L with a mean value of 12.66 ± 7.28 IU/L.
8) In subjects who were negative for HBsAg and negative for anti-HCV (349 cases) GOT ranged from 4-11 IU/L with mean value of 7.32 ± 1.43 IU/L, while GPT ranged from 5-10 IU/L with mean value of 6.43 ± 1.89 IU/L.
9) The number of blood donors who were positive HBsAg and anti-HCV positive were 5 cases. Four cases (80%) showed increased level of GOT, while other one showed normal GOT. Again, 3 cases (60%) showed normal GPT, while 2 cases showed increased level GPT.

There was no significant difference between the incidence of increased GOT or GPT in HBsAg positive or HCV positive blood donors as shown in table 1.

DISCUSSION

Non-A non-B hepatitis is a recognized complex of diseases caused by hepato-tropic agents that are serologically unrelated to either hepatitis A virus (HAV) or hepatitis B virus (HAV)[5].

Previously, it was demonstrated that hepatitis B and non-A non-B hepatitis are epidemiologically similar, particularly with respect to parenteral risk factor, and that certain risk behaviour such as IV drug abuse are likely to result in infection with both viruses[6]. In our study anti-HCV were recorded in 26 blood donors (26/400) at the ratio 6.5%. This study was done by enzyme linked immunosorbent assay (ELISA) and no confirmatory test was done. The number of donors who were positive for both HBV and anti-HCV were 5 donors (5/400) at the ratio 1.3%.

Two liver function tests (serum GOT and serum GPT) were done to evaluate the effect of positivity of HBV and HCV on the hepatic status. From 45 blood donors positive for HBsAg and 26 blood donors positive for anti-HCV, only 33% in the first and 19% in the second showed increased transaminase levels. So positivity for HBV and HCV did not correlate with elevated levels of any of the enzyme under test.

Although, it was suggested that the lack of relationship between the elevation of liver tests and evidence of post-exposure to HBV[7], our study showed that anti-HCV was detected in 26 blood donors (6.5%). This is a high incidence in comparison to a survey done by Center for Disease Control (1989) carried out from 1985 through 1986, volunteer blood donors to New York blood program, anti-HCV, was detected in 1.4% of donors[8].

Table 1: GOT and GPT levels in HBsAg positive, anti-HCV positive and both HBsAg and anti-HCV positive subjects

	GOT		GPT	
	mean value ±S.D. IU/L	range IU/L	mean value ±S.D. IU/L	range IU/L
HBsAg +ve cases	14.52±3.226	10-37	11.63±5.576	4-32
Anti-HCV +ve cases	15.3 ±6.225	8-37	12.63±6.228	7-38
HBsAg +ve and anti-HCV +ve cases	13.66±1.826	7-23	12.66±7.280	8-27
HBsAg-ve and anti-HCV -ve cases	7.32±1.43	4-11	6.43±1.890	5-10

$p > 0.05$ (Non Significant)

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الترابط بين الأجسام المضادة لفيروس الإلتهاب الكبدى س ومستضدات (١س) للإلتهاب الكبدى فى المتبرعين بالدم

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بفحص ٤٠٠ متبرع بالدم لتعيين المستضدات (١س) للإلتهاب الكبدى ب ووجدت فى ٤٥ حالة بنسبة ٣ر١١٪ . بينما تعيين الأجسام المضادة لفيروس الإلتهاب الكبدى س ووجدت فى ٢٦ حالة بنسبة ٥ر٦٪ .

تم تعيين الإثنين مترابطين فى ٥ حالات (٣ر١٪) .

وبقياس الإنزيمات الكبدية (ج و ت) و (ج ب ت) وجدت معدلاتها عالية عن المعدل الطبيعى فى ٥ من الحالات الإيجابية للمستضدات (١س) للإلتهاب الكبدى ب أو الأجسام المضادة لفيروس الإلتهاب الكبدى س . لوكن تلك المعدلات غير الطبيعية كانت بدون دلالة إحصائية عند مقارنتها بوجود المستضدات أو الأجسام المضادة .