



Investigation of Hepatitis Functioning through Bilurbin at Blood Donors with HBV and HCV Positive

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Abstract

The analysis of the liver functioning through bilurbin dosage has been up on fifty blood donors. The reactive bandages have been used to seek bilurbines in the urines of those patients considered as carriers with HBV and HCV. After analysis, this descriptive study has shown that out of 31 cases found at men more than 25 years old, 27 cases whose livers don't function present a hyper degree of bilurbine when there is hepatitis. The doorstep of 3.9 $\mu\text{mol/L}$ hold 65.2% of hepatitis B and hepatitis C. Whereas at the doorstep of 1.5 $\mu\text{mol/L}$ and 7.8 $\mu\text{mol/L}$, the HBV has got respectively 8.7% and 26.1% of cases; and HCV has also got 33.3% and 26.7% of cases.

Subject Areas

Biochemistry, Public Health

Keywords

Investigation, Hepatitis Functioning, Bilurbin, Blood Donors, HBV/HCV Positive

1. Introduction

By definition, hepatitis is an inflammation of the liver and it constitutes a big problem of the public health due to several sources. Generally, it is due to the virus, but it is particularly due to one of the viruses of hepatitis which are A, B, C, D, E.

After a long fight against virus, these immune system produce inflammation because of immunity defence of the virus. This fight leads to trouble (pertuba-

tion) of liver functioning [1]. The functioning of liver may be explored by bile pigment of which the major one is bilirubin (which is produced at 300 mg a day by a man). The plasma is accumulated with bilirubins that are again absorbed and secreted by the liver, so the kidney leads to icterus [2].

The purpose of this work is to explore, examine the liver function by looking for the bile pigment in the urine of blood donors whose HBV and HCV tests are positives.

Thus, the result that will be obtained will lastly contribute in taking care of those patients suffering from hepatitis discovered at blood donors.

2. Method and Material

Among blood check up transfusion required, we do have the detection of B and C hepatitis. For those patients having antibodies against antigens of hepatitis, sample of urine has been required. Whenever the result seems to be positive, we will be searching bile pigments not in the blood but in the urine of either those antigens having B hepatitis or those having C hepatitis.

Our researches took place at Jason Sendwe Regional Hospital of Lubumbashi from February to June 2016. Among fifty blood donors considered as a sample, thirty-eight positive cases after a test have been listed. Moreover twenty three blood donors were positive with B hepatitis and fifteen also positive with C hepatitis. No case was positive with both hepatitis at the same time. The thirty-eight cases helped as sample with their urines for the bilirubin dosage.

After having obtained the authorization of the ethics committee, we conducted this descriptive study. The technique of the reactive bandages has been used and a checkup has also been done directly in urine of positive donors with HBV and HCV.

After filling a flask at one quarter with urines, a reactive bandage was dived. First this reactive bandage has been observed one minute, then we started reading thanks to the different colors observed referring to the parameters found on the scale review. And lastly, it led to the following results [3]:

- No turn of color: negative outcome
- Coloration turning white yellow: positive (+) at least 1.5 $\mu\text{mol/L}$
- Coloration turning to yellow: positive (++) corresponding to 3.95 $\mu\text{mol/L}$
- Coloration turning to orange: positive (+++) corresponding to 7.85 $\mu\text{mol/L}$

3. Results

The detection of hepatitis that has been done at blood donors has shown that 76% of cases were positive, 46% with HB antigens and 30% with HC antigens. The other 24% of remained cases didn't have either hepatitis B or C. The following researches were concerning only on 23 positive patients, or 76% of cases (Table 1).

Those samples with bile pigments, the doorstep of 3.9 $\mu\text{mol/L}$ corresponding to (++) on the reactive bandages has held more cases at least 65.2% of HBV and 40% of HCV. At the doorstep of 1.5 $\mu\text{mol/L}$ and 7.8 $\mu\text{mol/L}$; Hepatitis B has got

Table 1. Adjustment of HBV and HCV positive at 50 blood donors.

Antigene results		Size	Percentage
Negative		12	24
Positive	HBV	23	46
	HCV	15	30
Total		50	100

respectively 8.7% and 26.1% of cases and Hepatitis C has also got 33.3% and 26.7% of cases (**Table 2**).

Referring to the outcome of this chart III, we have noticed that the patient male sex with HBV and HCV positive regarding to the respective outcome of 86.9% and 73.3% against 13.04% and 26.7% were dominant to patient female sex (**Table 3**).

Referring to the age, all the two tests have led to the neighbouring outcome. Patients, more than 25 years old, have been numerous: 69.5% in the case of hepatitis B and 73% in the other case hepatitis C (**Table 4**).

4. Discussion

Blood transfusion is a safety problem. In Africa, the results of paraclinical examinations seem to be the problem of transfusion safety with a residual risk that is almost nil [4].

In this study, we are interested in the antigens of the hepatitis B and C viruses. These diseases constitute a real public health problem [5]. In general, urine contains bile pigments including bilirubin and urobilinogen [6]. Bilirubin, interest of the present study, is found in urine at 2 mg/dl [7]. Hepatic assessment demonstrates the various functions of the liver [6] and urine provides valuable information for this purpose [8].

In our study, the detection of hepatitis that has been done at blood donors has demonstrated that 46% of cases had hepatitis B antigens and 30% of other cases had Hepatitis C antigens. However, 24% of donors didn't have either B hepatitis or C hepatitis. Elzouki has found among the blood donors of Libya a prevalence of the antigen of the hepatitis B and anti-hepatitis C antibodies respectively of 2.2% and 1.3% [9]. Patients with immunosuppressive status with respect to the hepatitis C virus have been met [10].

Samples with bile pigments, the doorstep of 3.9 $\mu\text{mol/L}$ corresponding to (++) on the reactive bandages has held more cases, I mean 65.2% with Hepatitis B and 40% with HC hepatitis. At the 1.5 $\mu\text{mol/L}$ doorstep and 7.8 $\mu\text{mol/L}$, Hepatitis B has got respectively 8.7% and 26.1% of cases; and Hepatitis C had 33.3% and 26.7% of cases. These adjustments had been compared to the doorstep of sensitivity of stalks which is 0.5 mg/dl.

In all, these results prove that the disease is discovered lately because other sensitive check up may detect the virus.

Regarding to the profile of checked up patients, we realized that many of

Table 2. Results of bile pigments at the patients considered as HBV/HCV positive.

	Bilurbinery	HBV positive	HCV positive
Positive	+ (1.5 µmol/L)	2 (8.7%)	5 (33.3%)
	++ (3.9 µmol/L)	15 (65.2%)	6 (40%)
	+++ (7.8 µmol/L)	6 (26.1%)	4 (26.7%)
	Total	23 (100%)	15 (100%)

$X^2 = 6.28$; $p = 0.043$; $ddl = 2$.

Table 3. Dispatching of hepatitis cases positive regard to the sex.

Sex	HBV positive		HCV positive	
	Size	%	Size	%
Male	20	86.94	11	73.3
Female	3	13.04	4	26.7
Total	23	100	15	100

$X^2 = 1.12$; $p = 0.289$; $OR = 2.4$; $CI^{95\%} = [0.46; 12.86]$.

Table 4. Dispatching of positive cases with regard to HBV tests according to the age.

Age (in years)	HBV positive	HCV positive
≤25	7 (30.4%)	4 (26.6%)
>25	16 (69.5%)	11 (73.3%)
Total	23	15 (100%)

$p = 0.8023$; $OR = 1.2$ $CI^{95\%} = [0.28; 5.12]$.

patients were male suffering hepatitis at least 86.94% with hepatitis B positive and 73.3% with hepatitis C positive. Women having 13.04% were less represented with hepatitis B and 26.7% Hepatitis also.

As far as the research was upon volunteers, we try to understand that several men agree to be donors than women in our surroundings. However, Habou Hadiza Akilou [5] has discovered that the degree (prevalence) of HCV antigene was higher at women than men (90.7% against 71.87%).

Considering the **Table 4**, we have also detected that out of 23 cases known positive with bile pigments recognized in the urines of donors with hepatitis B positive, 7 donors I mean 30.4% were less aged or equal to 25 years old and 16 donors I mean 69.5% were more aged than 25 years old.

Concerning to HCV, 4 donors or 26.6% were less aged or equal to 25 years old and 11 donors or 73.3% were more aged than 25 years old. The age was also one of the conditions to be called universal donor. In this surrounding, we had examined only those patients who were 25 years old.

5. Conclusion

Our researches have confirmed that there was a hepatic disfunctioning after checking on different volunteer donors. A hyper bilurbinery in the case of hepatitis

has been discovered. A deep research via transaminases dosage or Y-GT on one too much representative sample should be interesting to evaluate a place of each virus in the destruction of the liver.

Authors' Contribution

All authors contributed in the different phases of the research.

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Abbreviations Used

HBV: Hepatitis B virus;
 HCV: Hepatitis C virus;
 HB: hepatitis B;
 HC: hepatitis C;
 OR: Odds Ratio;
 CI: confidence interval.