

# HEPATITIS B AND C VIRUS AND THEIR EFFECTS ON LIVER AMINOTRANSFERASES IN PREGNANT WOMEN IN MINNA, NIGER STATE, NIGERIA.

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## BACKGROUND

Hepatitis B and C virus are major public health problems worldwide; Nigeria inclusive. Hepatitis B virus (HBV) was discovered in 1965 by Dr Baruch Blumberg, while Hepatitis C virus (HCV) discovered in 1989 by Choo and his co-workers. There are about 350 million people in the world with hepatitis B and 200 million people with hepatitis C; with prevalence rate of 11.0% for hepatitis B and 2.2% for hepatitis C. Nigeria has prevalence rate of 12.3% while Niger State, Nigeria has 4.0%. Hepatitis B is a member of Hepadnaviridae; a group of DNA-containing viruses that causes hepatitis. It's replication does not involve the integration of virus in the DNA of the host but frequently found in the cells. Hepatitis C is an RNA virus that belongs to the family of Flaviviruses; it's natural target are hepatocytes and possibly B-lymphocytes. Most pregnant women affected with chronic hepatitis are asymptomatic, especially in Minna, Niger State, centre North of Nigeria; thus biochemical assessment of the liver to determine the level of ALT and AST of the pregnant mothers becomes important to save their lives and avoid transmissions to the new born. The aim of this study is to determine whether liver aminotransferases and serum albumin can be affected by hepatitis diseases during pregnancy.

## METHODS

912 pregnant women attending antenatal at General Hospital and Health Care Centre, all in Minna, Niger State, Nigeria, were recruited for the study. Demographic and past clinical histories were obtained using a questionnaire. Serum samples from each study subject were tested using third generation enzymes immunoassay kits for hepatitis B surface antigen (HBsAg) and antibodies against hepatitis C (HCV). Serum Alanine aminotransferases (ALT) and aspartate aminotransferases (AST) activities were also estimated in all subjects using Reitman franked method. Also serum albumin was measured in all subject using Bromocresol green method by Teitz.

## RESULTS

Results showed that 2.0% and 2.4% of the 912 blood samples, tested positive on HBV and HCV respectively. Furthermore, 2.4% of the 912 blood samples tested positive with both HBV and HCV. The mean AST levels for HBsAg negative and positive were  $21.01 \pm 0.10$  and  $24.32 \pm 0.58$ , respectively. While the mean ALT level were  $11.08 \pm 0.110$  and  $16.02 \pm 0.02$ , respectively. The mean AST for anti-HCV negative and positive subject were  $21.34 \pm 0.02$  and  $18.01 \pm 0.10$ , respectively. There was a significant increase in the levels of AST and ALT between the HBsAg positive and negative pregnant subjects ( $p < 0.05$ ). Furthermore, the mean serum albumin level for HCV positive and negative subject were  $56.0 \pm 4.24$  and  $71.1 \pm 7.4$  respectively. There was significant increase in albumin level between HBsAg and HCV positive and negative subjects ( $p < 0.05$ ).

TABLE 1:  
T-test for Serum Albumin among the Pregnant Women Tested  
Significance =  $P < 0.05$   
S.D = Standard Deviation

Group	Parameter	Status	Mean $\pm$ S.D (IU/L)
HBsAg	Albumin	Positive (n = 183 )	71.20 $\pm$ 5.50
		Negative (n = 729)	71.16 $\pm$ 7.64
HCV	Albumin	Positive (n = 22 )	56.0 $\pm$ 4.24
		Negative (n = 890)	71.1 $\pm$ 7.4

The various images below represent  
A= Public health sensitization on hepatitis in General Hospital, Minna, Niger State, Nigeria  
B= Pregnant mother with hepatitis B virus  
C= Phlebotomy process  
D= Testing process using testing kit



TABLE 2:  
T-test for AST and ALT among the Pregnant Women Tested  
Significance =  $P < 0.06$ , S.D = Standard Deviation  
AST = Aspartate Transaminase, ALT = Alanine Transaminase

Group	Parameter	Status	Mean $\pm$ S.D (IU/L)
HBsAg	AST	Positive (n = 183 )	24.32 $\pm$ 0.58
		Negative (n = 729)	21.01 $\pm$ 0.10
HBsAg	ALT	Positive (n = 183 )	16.02 $\pm$ 0.02
		Negative (n = 721 )	11.08 $\pm$ 0.010
HBsAg	AST	Positive (n = 22 )	18.01 $\pm$ 0.10
		Negative (n = 890)	21.34 $\pm$ 0.02
HBsAg	ALT	Positive (n = 22 )	16.02 $\pm$ 0.10
		Negative (n = 890 )	11.42 $\pm$ 0.02

## CONCLUSIONS

HBV and HCV virus can be present in pregnant women and can alter liver aminotransferases and serum albumin. There is therefore urgent need for screening of all pregnant mothers for HBV AND HCV. In addition, there should be robust vaccination of all HBsAg negative pregnant women and their infants against HBV.

Early screening and biochemical assessment of pregnant mothers is recommended to determine the level of ALT and AST on time to prevent chronic state and transmission to newborn.

Support from Nigeria government, World Health Organization, World Hepatitis Alliance and non-governmental organizations for free provision of antiviral drugs, vaccines and other necessary aids required to eliminate virus hepatitis from being transferred from pregnant mother to her unborn child and to those already infected .

## REFERENCES

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## CONFLICTS OF INTEREST

The author hereby certifies that there is no conflict of interest.