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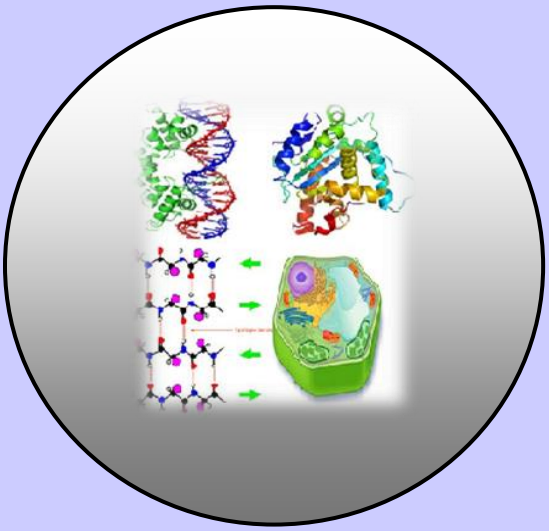

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RESEARCH PAPER

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Serological Evidence of HBV and HDV Co-Infection among Pregnant Women in Maiduguri, Borno State Nigeria

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ABSTRACT

Hepatitis Delta Virus (HDV) infections only patient that are already infected by hepatitis B Virus (HBV) because this is sub satellite virus which depends on and propagate only in the present of HBV. HDV causes co-infection or super infection which severs complication as compared to only HBV infection. therefore the aim of this study was determine the seroprevalance of HDV (as a co-infection with HBV) in Maiduguri, Borno state , by using CORTEZ DIAGNOSTIC , INC .,USA. Hepatitis B virus (HBV) and hepatitis delta virus (HDV) are highly endemic in Africa however, little information is available on the origin, circulation and genetic diversity of those viruses in Central Africa: this hepatitis B virus Infection is a pandemic and chronic infection may lead to chronic liver diseases which often lethal, HDV base on my study 6.6% one seropositive while 1 co-infection with HBs Ag and HDs Ag are seropositive.

Key Words: Serological, HBV, HDV and Infection.

INTRODUCTION

Hepatitis D virus (HDV) is a defective RNA virus dependent on hepatitis B virus (HBV) infection for its replication and expression1. HDV is well known to induce a spectrum of acute and chronic liver diseases. Acute infection with HDV can occur simultaneously with acute HBV infection or may be superimposed on chronic HBV infection. Several reports indicated a declining trend in the occurrence of HDV infection in some geographical areas (Delfino et al., 2012, Emechebe et al., 2009, Foupouapouognigni et al., 2011 and Irena et al., 2011). For example, while HDV was responsible for a high proportion of cases of acute and

chronic liver disease in Southern Europe during the 1970s, its seroprevalence was reported to have declined substantially in 19974. (Huo *et al* 1997) from Taiwan have reported a decrease in HDV infection in hepatitis B surface antigen (HBs Ag) carriers from 23.7 in 1983 to 4.2 per cent in 1995. Though the presence of HDV infection in Indian patients with different types of liver diseases has been studied in the past (Kasrain et al., 2011, Khan et al., 2011, Maria et al., 2009, Natali, 2010, Okonko et al., 2012, Huo et al., 1997), no study has been done to evaluate the change in HDV epidemiology in India. We undertook this study to evaluate the seroprevalence of HDV infection in patients with HBV-related liver diseases attending a Government hospital in New Delhi and to evaluate any epidemiological change by comparing the results with seroprevalence figures reported in the past.Hepatitis B virus (HBV) is a member of the family *hepadnaviridae*. The virus particle consists of an outer lipid envelope and icosahedra nucleocapsid core that composed of protein. These virions are 30-42nm in diameter. The outer envelope contains embedded proteins that are involved in viral binding of, and entry into, susceptible cells. Hepatitis B virus (HBV) infection is a global health problem and it is estimated that 350 million people worldwide are chronic HBV carriers, representing approximately 7% of the total population. 1 It causes one million deaths annually. 2 Approximately, 5% of the global HBs Ag carriers are also co-infected with hepatitis D virus (HDV). HDV is a defective RNA virus dependent on HBV infection for its replication and expression. Current estimates suggest that 15 - 20 million people are infected with HDV and its prevalence in Italy, east of Europe and west of Asia is higher than the rest of the world, although one should consider that these estimates are inaccurate and difficult to perform as systematic screening is not performed in HBV-infected individuals, especially if they present with normal liver enzymes. (Kasrain et al., 2011 and Khan et al., 2011). It is estimated that each year, 7,500 HDV infections occur in the United States. 7 In Pakistan, the frequency reported varies from 26.8% to 58.6% of patients infected with hepatitis B virus (). The clinical course of HDV infection may be variable. This unique human virus is associated with co-infections or super infections of patients already infected with HBV. It is known that co-existent infection with HDV tends to accelerate the progress of chronic HBV infection to chronic hepatitis, cirrhosis and hepato cellular carcinoma. 10 It is estimated that up to 80% of all chronic patients with hepatitis delta will develop cirrhosis. This percentage is about three times higher when compared to that observed in hepatitis B patients. Hepatitis caused by HDV may result in a 3-fold increase in hepatocellular carcinoma development and 2-fold increase in mortality compared with HBV infection without HDV. 11 The aim of this study was to determine the frequency of HDV seropositivity in HBs Ag reactive patients attending GI Clinic or admitted in a tertiary care hospital with reference to their demographic characteristics like age, gender and ethnicity.

MATERIAL AND METHODS

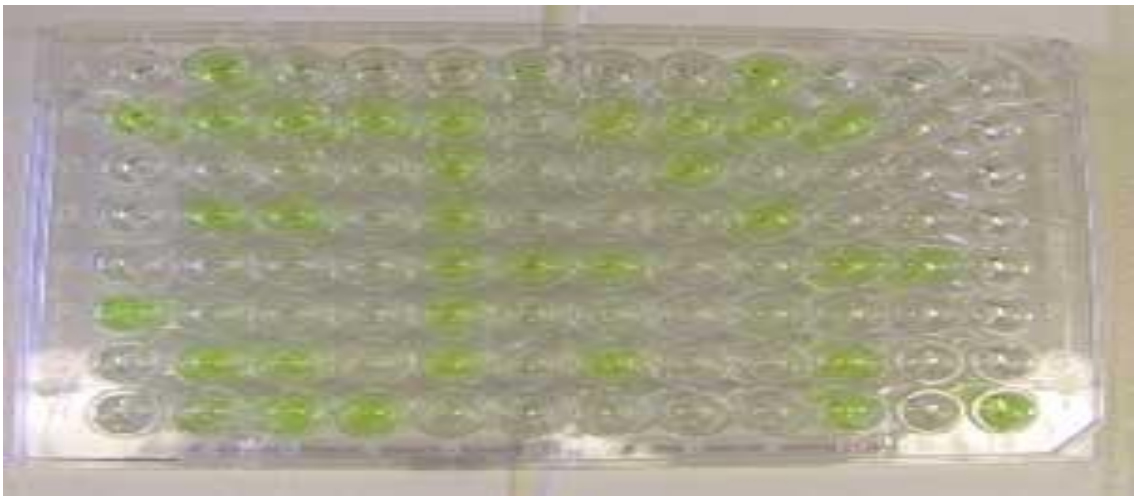
DETERMINATION OF HDV – IgG

This HDV-IgG ELISA is based on solid phase, two-step incubation Double Antibody Sandwich Principle. Polystyrene microwell strips are pre-coated with purified antibodies specific to HDV. Patient's serum/plasma is added together with Extraction Solution. If present, the viral particles are disrupted and the specific HDV antigens are captured in the wells. The microwells are washed to remove unbound serum proteins. A second antibody conjugated with Horseradish Peroxidase (HRP) is added and during the second incubation, this antibody will be bound with the captured antigen.

After washing to remove unbound conjugates, Chromogen solutions containing Tetramethyl benzidine (TMB) and urea peroxide are added to the wells. In presence of the antibody-antigen-antibody (HRP) "sandwich" immuno complex, the colorless. Chromogens are hydrolyzed by the bound HRP conjugate to a blue colored product. The blue color turns yellow after stopping the reaction with sulfuric acid. The amount of color can be measured and is proportional to the amount of antigen in the sample. Wells containing samples negative for HDV antigens remain colorless.

DETERMINATION OF HBs Ag

HBs Ag ELISA (TMB) is a solid-phase enzyme immunoassay (ELISA= enzyme-linked immunosorbent assay) based on the sand which principle. The solid phase of the microtiter plate is made of polystyrene wells coated with mouse monoclonal antibodies specific for HBs Ag; whereas guinea pig polyclonal antibody purified by affinity chromatography is used to prepare the anti-HBs-peroxidase (horseradish) conjugate in the liquidphase. When a serum or plasma specimen containing HBs Ag is added to the anti-HBs antibody-coated wells together with the peroxidase conjugated anti-HBs antibody and incubated, an antibody HBs Ag-antibody-peroxidase complex will form on the wells. After washing the microtiter plate to remove unbound material, a solution of TMB substrate is added to the wells and incubated. A colour develops in proportion to the amount of HBs Ag boud to Anti-HBs. The peroxidise-TMB reaction is stopped by addition of sulphuric acid. The optical density of developed colour is read with a suitable photometer at 450nm with a selected reference wavelength within 620 to 690nm.



RESULT AND DISCUSSION

Table 1. Seroprevalence of HDV IgG based on aged.

Age (Years)	Total	No of positive	No of negative	seroprevalance
16 – 20	31	1	30	3.2%
21 – 25	18	0	18	0%
26 – 30	22	3	19	13%
31 – 35	10	1	9	10%
>35	10	1	9	10%
Total	91	6	85	6.6%

From table 1 above pregnant women with the age of group 10-20yrs, 30-35yrs > 35yrs, all have one , the sample each presenting 32% (1/31) and 10% (1/10) and 10% (1/10) seroprevalance respectively while does had sereprevalance of 0% (0/18) and 13.6% (3/22).

Table 2. Seroprevalence of HDV IgG based on Trimester.

Trimester	Total No.	No. of positive	No. of negative	Seroprvalance
First	49	4	45	8.2%
Second	24	2	22	8.3%
Third	18	0	18	0%
Total	91	6	85	6.6

Based on trimester as contained in table 2: 8.2% (4/49) of pregnancy women in their 1st trimester and 8.3% (2/24) in their 2nd trimester were seroprevalance non of the women in the trimester was negative.

Table 3. Seroprevalence of HDV IgG based on history of miscarriage.

History of Miscarriage	Total	Positive	Negative	Seroprevalance
Yes	15	0	15	0%
No	76	6	70	7.9%
Total	91	6	85	7.9%

Table 3. above shows that 15 pregnant women who have had miscarriage , none of them was reactive while 7.9% (6/76) of those who had no history of miscarriage were positive .

Table 4. Seroprevalence of HDV IgG based on history of still birth.

History of Still birth	Total	Positive	Negative	Seroprevalance
Yes	14	1	13	7.1%
No	77	5	72	6.3%
Total	91	6	85	13.4%

Table 4 above shows that out of 14, still birth 1 was positive with prevalence of 7.1% of the still birth.

Table 5. Seroprevalance of co-infection of HBsAg and HDsAg

Age	Positive HBsAg	HDsAg
26	**+**	**+**

CONCLUSION

The prevalence of HDV and HBV infection has been demonstrated among the pregnant women studied. These women were chemically symptomatic indicating that they were possible carriers of these viruses at this investigation .The risk of transmitting these infectious to their offspring vertically and/or horizontally is very high proportion of these carriers may develop a chronic liver diseases including /with age of 26yrs co-infection with HBsAg and HDsAg.

RECOMMENDATION

The prevalence of both HDs Ag and HBs Ag anti-bodies among healthy pregnant women, problem associated with these infections can be expected to remain in the study area for a long time. To reduce the spread of these diseases, the following are recommended.

1- All pre-transfused blood should be screened for both HDs Ag and HBs Ag anti bodies

2-screening of blood or its product should not be limited to urban settlements but should include governmental and non-governmental health clinics in both rural and urban area.

3. There is a great need for health education campaign to raise the awareness of the populace against the traditional practices which aid the transmission of these agents

4. For purpose of ease of handling and cost efficiency there is need for a single diagnostic test incorporating HDs A and HBs Ag anti-body.

5-there is a need for mass vaccination of the populace against HDV and HBV. INDIVIDUALS SHOULD BE encourage to test for possible carrier state and health carriers should be treated appropriate (e.g with interferonalfaza, Roferon –A) which actually controls the virus replication and clear the virus.

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