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Original Article

The serological profile of herpes virus amongst patients with bad obstetric history

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ABSTRACT

Aim & objectives: The aim of the study is to evaluate the incidence of Herpes infection (HSV-2) in women with Bad Obstetric History (BOH).
Material and method: A retrospective study was conducted on 600 patients with BOH whose blood samples were referred to National Centre for Disease Control (NCDC), Delhi from various government hospitals of Delhi. ELISA was performed on these samples to detect HSV-2 IgM antibodies to establish the recent infection.
Results: Out of the 600 samples screened; 42 (7%) tested positive. Of these 42 cases, 36 (85.7%) belonged to adult females with history of repeated abortions/stillbirth deliveries. Rest 6 were neonates of whom 4 (9.5%) had disseminated herpes, and 1 (2.3%) had neonatal cholestasis and history of fever with rash.
Conclusion: This study showed significant correlation between HSV-2 infections and recurrent abortions in women and/or congenital/perinatal infection in neonates. As HSV-2 is a preventable & treatable disease, it should be actively looked in for in patients with BOH.

1. Introduction

Bad obstetric history (BOH) implies previous unfavorable fetal outcome in terms of two or more consecutive spontaneous abortions, history of intrauterine fetal death, intrauterine growth retardation, stillbirth, early neonatal death, and/or congenital anomalies.[1] Several factors involved in human reproduction have been attributed to this pregnancy loss. Some important causes of spontaneous abortions include

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genetic and uterine abnormalities, endocrine and immunological dysfunctions, infectious agents, environmental pollutants, psychogenetic factors and endometriosis.[2,3] The ability of the fetus to resist infectious organism is limited and the fetal immune system is unable to prevent the dissemination of infectious organism to various tissues of the body. Therefore maternal infections, especially during the early gestation, can result in fetal loss or malformations.[4] The fetus and/or neonate are infected predominantly by viral but also by bacterial and protozoal pathogens. The prenatal and perinatal infections falling under the designation of TORCH complex i.e. *Toxoplasma gondii*, Rubella virus, Cytomegalovirus (CMV) and the Herpes Simplex Virus (HSV-2) are often associated with adverse fetal outcomes and reproductive failures and are the major cause of BOH.[5]

These maternal infections are clinically asymptomatic and also their clinical diagnoses are unreliable. Therefore the diagnoses of these infections depend on serological evidences. The detection of the IgM antibody against TORCH is the best approach for the identification of these infections.[6]

Herpes simplex virus (HSV) types 1 and 2 are ubiquitous DNA viruses which contribute considerably to morbidity and mortality among humans especially in immunocompromised states. These two serotypes exhibit approximately 50% nucleotide homology and share several important biologic characteristics, notably the capacity to establish latent infections which reactivate periodically, causing mucocutaneous or neurological disease. HSV-1 is usually transmitted nonsexually and causes stomatitis, keratitis, skin lesions, and encephalitis. By contrast, HSV-2 is typically transmitted sexually, causing genital lesions. However either of the virus can infect the neonate.[7]

Neonatal HSV infection is usually acquired at birth by contact with the mothers infected birth canal. However few infants have had findings suggestive of intrauterine infection. The incidence of neonatal infection ranges from 1 in 2500 to 1 in 20,000 live births and two-thirds of cases are caused by HSV-2.[7,8]

Congenital HSV infection usually manifests as skin lesions and scars, chorioretinitis, microcephaly, and hydrocephaly. Neonates with HSV infection can deteriorate rapidly as a result of respiratory distress, shock, disseminated intravascular coagulopathy, or encephalitis. Infants who survive neonatal HSV encephalitis have high rates of neurological sequelae, consisting of seizure disorders, mental retardation, and visual or motor deficits.[8]

This study was undertaken to detect the serological evidence of the HSV-2 infections in a group of patients with bad obstetric history and symptomatic neonates with congenital infection, by establishing the presence of the specific IgM antibodies.

2. Material and methods

The study was carried out in women of childbearing age with BOH and neonates exhibiting congenital infection which are referred regularly to virology lab of NCDC from various government hospitals of Delhi for diagnosis of viral etiology of these cases. A total of 600 cases who presented with one of the features defined under BOH/congenital infection along with duly filled Performa mentioning demographic, medical, and clinical features were included under the study.

Blood samples obtained from each patient were centrifuged, and the sera were kept frozen at −20 °C until tested. Serum samples were then analyzed for qualitative HSV-2 specific IgM antibodies using commercially available μ capture ELISA (Enzywel – DIESSIE Diagnostic kits). The manufacturer's protocol instructions provided with the kit were strictly followed to carry out the assay. The interpretation of the results was based on controls included in the kit. A test sample was said to be positive for IgM antibodies when its absorbance value was higher than the absorbance value of the cut-off control. Positivity of IgM antibodies against HSV-2 in a sample indicates active or recent infection of this virus.

3. Results

In our study 600 cases were screened for anti-HSV-2 IgM antibodies of which 42 (7%) were positive (Fig. 1). The clinical presentation of the cases is shown in Table 1 & Fig. 2. Among 42 positive cases, majority 36 (85.7%) were adult females of child bearing age having had a history of repeated abortions ($p < 0.001$) (Fig. 3). Of these 36 seropositive female patients, 10 (27.8%) were between 20 and 30 years of age, 21 (58.3%) were between 30 and 40 years and 5 (13.9%) were between 40 and 50 years of age (Table 2).

Majority 30 (83.3%) of these females presented with ≥2 abortions (complete) and 6 (16.7%) presented with single abortion (complete). Here 16.7% were primigravida (G1) while 25% were G2, 33.3% – G3, 16.75 – G4 and 11.1% – G5. All patients were homemakers and were referred from different government hospitals of Delhi. Rest 6 cases were of neonates of whom 4 (9.5%) presented with disseminated herpes infection and, 1 (2.3%) baby exhibited neonatal cholestasis and fever with rash. The mothers of the four babies were also positive for HSV-2 IgM.

The incidence of HSV-2 infection among the BOH patients of the study was 7%.

4. Discussion

The present study shows incidence of the HSV-2 infection to be 7% among the patients falling into the category of BOH and

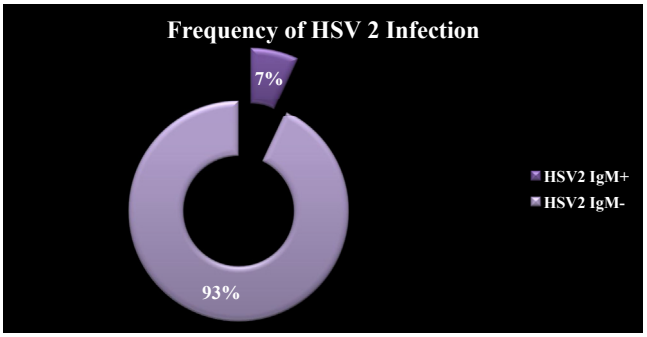

Fig. 1 – Seropositivity of HSV-2.