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Original Research Article

Incidence and pattern of infections in pregnant women with bad obstetric history

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ABSTRACT

Background: Adverse outcomes have been seen in pregnant women who had prior bad obstetric history along with infection with TORCH [toxoplasma, other infections (syphilis, varicella zoster, hepatitis B), rubella, cytomegalovirus, herpes simplex]complex and bacterial vaginosis. These infections are known to affect the health of the fetus. Objective was to study incidence and pattern of infections in pregnant women with bad obstetric history.
Methods: A total of 190 patients with bad obstetric history fulfilling the methodology criteria were evaluated. Serological and molecular evaluations were carried out for TORCH complex and bacterial vaginosis was detected by both gram stain and gold standard clinical Amsel criteria and outcomes were followed.
Results: Out of 190 pregnant women with bad obstetric history, a total of 36 (18.8%) were detected to have infections causing bad obstetric history. Toxoplasma was positive in 7 (20%) of the cases, 3 (51.92%) of them had abortions. Rubella in 12 (32%) of the cases, 7 (60%) cases had sensorineural deafness. Cytomegalovirus in 1 (2%) of the cases, 1 (100%) of the case had microcephaly. Herpes in 8 (22%) cases, 6 (71.1%) cases had abortions. Bacterial vaginosis in 8 (22%) of the cases, 4 (48.6%) cases had preterm delivery. The presence of infections with TORCH complex and bacterial vaginosis was related to adverse pregnancy outcomes.
Conclusions: Women with bad obstetric history are prone to infections during pregnancy and have been found out to be associated with adverse pregnancy outcomes. Hence pregnant women should be screened so that early diagnosis and treatment of infections can be done to have better pregnancy outcomes.

Keywords: Bad obstetric history, Incidence, Infections, Outcome, Pregnancy

INTRODUCTION

If a woman had abortions continuously two times or more or had previous history of still births, or had previous history of neonatal deaths which were early, or had previous episodes of intra uterine growth retardation, or had a baby with congenital anomalies or had an episode of intra uterine fetal deaths then she is classified as having the bad obstetric history. It has been estimated that its incidence is around 2%.[1]

Various factors have been incriminated for the causes of the loss of the pregnancy. These can be ranging from abnormalities in the uterus, it can be genetic, it can be dysfunction in the immunological mechanisms, it can be dysfunction in the endocrine mechanisms, it can be the infections of the genital tract, it can also be attributed to the pollutants in the environment, it can also be attributed to the factors of psychogenetic in nature or it can even be attributed to the endometriosis. Mothers age more than 30-35 years affects the functions of the ovaries thereby there is more and more production of the oocytes which are not of good quality.[2]

Abortions are usually attributed to abnormalities of the chromosomes. Studies have also shown the same facts.[3]

Loss of the pregnancy can also be caused by immune factors and they can be alloimmune or autoimmune. Presence of antibodies like anti-nuclear antibodies shows presence of auto immunity. Antiphospholipid antibodies causes the blood clots and thus contributes to the pregnancy loss by decreased blood flow to the placenta and thus leads to abortions and its incidence is around 15%.[4]

Loss of the pregnancy can also be caused by hormonal factors and its incidence is around 10-20%. This is due to malfunctioning of endocrine glands like thyroid for example. Spontaneous miscarriage can be seen in women with defect in the luteal phase. This is due to low levels of the progesterone hormone. Hypothyroidism during pregnancy can also lead to abortions.[5]

Loss of the pregnancy can also be caused by infections. Abortion during second trimester of the pregnancy can be due to presence in the first trimester of the pregnancy of the bacterial vaginosis. It can even lead to preterm delivery. Bad obstetric history can also be due to TORCH group of infections. Mother may not be affected much due to the presence of the TORCH group of infections but the fetus is severely affected due to the presence of the TORCH group of infections.[6]

It has been reported that there is a positive association between preterm delivery as outcome and the presence of the bacterial vaginosis. It has been reported that there is a positive association between spontaneous abortions and the presence of the bacterial vaginosis.[7]

Present study was carried out to study incidence and pattern of infections in pregnant women with bad obstetric history.

METHODS

It was a hospital based follow up study conducted at department of Obstetrics and Gynecology, Owaisi Hospital and Research Center and Princess Esra Hospital which are part of the Deccan College of Medical Sciences, Hyderabad for a period of June 2009 to June 2011. The study included 190 pregnant women with bad obstetric history.

Inclusion criteria

Women of age 19-35 years; history of previous unfavourable fetal outcome in terms of two or more consecutive fetal deaths, intra uterine growth retardation, still birth, early neonatal death, congenital anomalies were included.

Inclusion criteria

Patients with diabetes mellitus, patients with endocrine disorders, patients with chromosomal abnormalities, patients with preeclampsia, patients with uterine anomalies and other anatomical anomalies and patients with autoimmune diseases were excluded from the present study.

A detailed history of each case was recorded with reference to age, parity, socio economic status, menstrual history, obstetric history, and past medical, surgical and treatment history, family history, fertility status. The socio demographic details like social class, occupation and lifestyle were recorded using a standard questionnaire. Obstetric history was taken in relation to gravid, parity, number of living children, number of abortions, nature of previous labour and any history of congenital anomalies. Written informed consent was obtained from all the patients.

Thorough physical examination was made including height, weight, pulse, blood pressure, presence of pallor and its degree, jaundice, pedal edema were also noted. Breasts were examined to exclude any pathology. Systemic examination like cardiovascular and respiratory system was done to detect any abnormality. Abdominal examination was done to note the height of fundus, abdominal girth, and clinical estimation of liquor.

With proper aseptic precautions per speculum examination was done to detect any genital lesions, foul smelling discharge and other signs of infection.

Routine investigations like complete blood picture, urine for routine and microscopy, blood grouping and Rh typing, blood VDRL, screening for Australia antigen and HIV, HCV was carried out for all patients.

To confirm gestational age, determine liquor status, placental grade, TIFFA scan at 18-24 weeks to rule out any congenital anomalies.

Statistical analysis

The data was analysed using proportions. The data was entered in the Microsoft excel worksheet and analysed using proportions.

RESULTS

Table 1 shows incidence of bad obstetric history and infections. During the study period a total of 9526 women with pregnancy i.e. antenatal cases were seen in the department of Obstetrics and Gynecology in the study hospital. Out of them, 190 i.e. 1.9% were found to be having bad obstetric history. Thus the incidence of the bad obstetric history was found out to be 1.9%. out of these 190 patients who were antenatal cases with bad obstetric history, the incidence of infection was found out to be 18.8% i.e. 36 cases who were antenatal cases with bad obstetric history were found to have infections as the cause of bad obstetric history.

Table 2 shows causes of bad obstetric history. The most common cause of bad obstetric history was immunological

factors in 46 cases. The next most common cause of bad obstetric history was infectious factors in 36 cases. In 35 women the cause of bad obstetric history was anatomical factors. In 32 cases of the bad obstetric history, the cause could not be explained. Endocrine factors were found to be the cause of the bad obstetric history in 27 cases. 9 women were found out to be due to genetic factors. And remaining five was due to other factors.

Table 1: Incidence of bad obstetric history and infections.

Total number of antenatal cases	Patients with bad obstetric history	Percentage
9526	190	1.9
Patients with bad obstetric history	Patients with infections	Percentage
190	36	18.8

Table 2: Causes of bad obstetric history.

Causes	Number	Percentage
Genetic factors	9	5
Anatomical factors	35	18
Immunological factors	46	24.1
Endocrine factors	27	14
Infectious factors	36	18.8
Other factors	5	3
Un explained factors	32	17.1
Total	190	100

Table 3 shows various infectious causes in the patients. Out of the total 36 cases of bad obstetric history, majority of the infectious causes were found out to be due to rubella in 32% of the cases. The next most common the infectious causes were found out to be due to bacterial vaginosis in 22% of the cases and also the herpes in same proportion. Seven cases of infectious causes of the bad obstetric history were due to toxoplasma infection. One case of bad obstetric history was due to infection with cytomegalovirus.

Table 3: Various infectious causes in the patients.

Infectious causes	Number	Percentage
Bacterial vaginosis	8	22
Toxoplasma	7	20
Rubella	12	32
Cytomegalovirus	1	2
Herpes	8	22
Total	36	100

Table 4 shows perinatal outcome in various types of infections. There were seven cases due to toxoplasmosis out of which three had abortions. Three had IUFD or still birth. One had preterm delivery. Eight cases were due to bacterial vaginosis. Out of this four had preterm delivery. One had abortion. Two had premature rupture of membranes. One had chorioamnionitis. There were twelve cases due to rubella. Out of which seven had sensorineural deafness. Two had ophthalmic defects. Two had central nervous system defects. One had cardiac defects. There was one case due to cytomegalovirus infection which had microcephaly. There were total eight cases due to herpes. Out of which six had abortions, one had disseminated herpes and one had neonatal herpes.

Table 4: Perinatal outcome in various types of infections.

Type of infection	Outcome	Number	%
Toxoplasmosis (N = 7)	Abortions	3	42.9
	IUFD/Still birth	3	42.9
	Preterm delivery	1	14.2
Bacterial vaginosis (N=8)	Preterm delivery	4	50
	Abortions	1	12.5
	Premature rupture of membranes	2	25
	Chorioamnionitis	1	12.5
Rubella (N=12)	Sensorineural deafness	7	58.3
	Ophthalmic defects	2	16.7
	Central nervous system defects	2	16.7
	Cardiac defects	1	8.3
Cytomegalovirus (N=1)	Microcephaly	1	100
	Intrauterine growth retardation	0	0
Herpes (N=8)	Abortions	6	75
	Disseminated herpes	1	12.5
	Neonatal herpes	1	12.5

DISCUSSION

In the present study the incidence of bad obstetric history was 2%. According to Stephen et al the incidence was 2%.[1] We observed that all patients were in the age group of 19-35 years. We noted that genetic factors were seen in 9 (5%) cases. Meka et al stated that 5.5% of the couples had recurrent miscarriage due to chromosomal abnormality.[3]

Anatomical factors were seen as the cause of bad obstetric history in 35 (18%) of the cases. Stirrat et al stated that 12-15% of women with recurrent abortion have uterine malformation.[8]

We noted that immunological factors were the cause of the bad obstetric history in 46 (24.1%) of the cases. According to Levine et al 10-20% was due to antiphospholipid antibody syndrome.[9]

Endocrine factors were noted in 27 (14%) of the cases. Unexplained factors were seen in 5 (17.1%) of the cases.

Infections were seen in 36 (18.8%) of the cases. According to one study, infections in bad obstetric history were seen in 0.5-5% of the cases.[10]

Infectious causes incidence has been more in our set up due to the low socio economic status of patients and their poor hygiene and as we deal more with infertility patients they have pre-existing infections.

Surpam et al stated that maternal infections play a critical role in pregnancy wastage and their occurrence in patients with bad obstetric history is a significant factor. Clinical implications of TORCH infection in pregnant patients are many folds.[11]

Zargar et al stated that such patients have spontaneous abortions, still births or premature delivery in addition to various fetal anomalies.[12]

Jones et al stated that congenital toxoplasmosis also can have severe sequels including mental retardation, blindness and epilepsy in infants and much later in life.[13]

Diagnosis of TORCH infection was done by serological tests for IgG and IgM antibodies. A positive IgG establishes that a patient has been infected with TORCH, but a negative IgM result virtually rules out a recently acquired infection unless sera are tested so early that an antibody response has not yet developed or is undetectable. A negative IgM test result with a positive IgG result indicates infection at least six months previously.

Burg et al concluded that PCR assay is used for detection of TORCH infections.[14]

In Cochrane review Peyron et al stated that identifying acute infection through repeated antenatal tests means any infection can be followed up with antenatal diagnosis through PCR of amniotic fluid, combined with ultrasound to monitor fetal development.[15]

Amsel et al in 1983 developed criteria for diagnosis of bacterial vaginosis.[16]

We noted that bacterial vaginosis was present in 8 (22%) of the cases. Kekki et al stated that prevalence of bacterial vaginosis among pregnant women in between 10-20%.[17]

Lamont et al in Cochrane study stated that women with abnormal vaginal flora i.e. intermediate flora or bacterial vaginosis showed significant association with preterm birth less than 37 weeks of gestation.[18]

Toxoplasma was detected in 7 (20%) of the cases. Mombro et al and Montoya et al stated that the risk of congenital toxoplasmosis infection from a mother increases during pregnancy from 0-9% in the first trimester to 35-59% in the third trimester.[19,20]

Rubella was seen in 12 (32%) of the cases. Cytomegalovirus was noted in 1 (2%) of the cases. Stagno et al stated that cytomegalovirus occurs in 0.2-2.2% of the cases of all the live births.[21]

Herpes was seen in 8 (22%) of the cases. Brown et al stated that 22% of the pregnant women are seropositive for herpes simplex virus.[22]

As our patients here are from minority and private set up, they do not allow for autopsy hence the details of it are not enclosed.

There are some limitations of the study. The study was a single center study and there is need to conduct multi centric studies with sufficiently large sample size. The sample size in the present study was small and hence the results may not be generalized, but the study definitely gives a good picture when comparison of findings was made with other studies which used large sample size in their study.

CONCLUSION

Infections in bad obstetric history remain a significant public health concern. Women with bad obstetric history are prone to infections during pregnancy and have been found out to be associated with adverse pregnancy outcomes. Hence pregnant women should be screened so that early diagnosis and treatment of infections can be done to have better pregnancy outcomes.

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REFERENCES

1. Stephenson MD. Frequency of factors associated with habitual abortion in 197 couples. Fertil Steril. 1996;66:24-9
2. Rick JA, Zacur HA. The clinical management of repeated early pregnancy wastage. Fertil Steril. 1983;39:123-40.
3. Meka A, Reddy BM. Recurrent spontaneous abortions: an overview of genetic and non genetic backgrounds. Int J Hum Genet. 2006;6(2):109-17.
4. Bloomenthal D, Dadelszen P, Liston R, Magee I, Tsang P. The effect of factor V Leiden carriage on maternal and fetal health. Canadian Med Assoc J. 2002;167(1):48-54.
5. Higashino M, Takakuwa K, Arakawa M, Tamura M, Yasuda M, Tanaka K. Anti cardiolipin antibody and anti cardiolipin bets 2 glycoprotein I antibody in patients with recurrent fetal miscarriage. J Perinat Med. 1998;26(5):384-9.
6. Sutandar M, Garcia-Bournissen F, Koren G. Hypothyroidism in pregnancy. Obstet Gynecol Can. 2007;29(4):354-6.

7. Devi R, Sreenivas N, Rajangam S. Bad obstetric history and infections causes. Int J Hum Genet. 2002;2(4):269-71.
8. Stirrat GM. Recurrent miscarriage II: Clinical associations, causes and management. Acta Europea Fertilitis. 1990;21(3):141-3.
9. Levine JS, Branch DW, Rauch J. The antiphospholipid syndrome. N Engl J Med. 2002;346:752-63.
10. Cunnigham F, Lenovo K, Bloom S, Hauth J, Rouse D, Spong C, eds. Williams Obstetrics, 23rd edn. Berkshire, UK: McGraw-Hill; 2010:1404.
11. Surpam RB, Kamlakar UP, Khadse RK, Qazi MS, Jalgaonkar SV. Serological study for TORCH infections in women with bad obstetric history. J Obstet Gynecol. 2006;56(1):41-3.
12. Zargar AH, Masoodi SR, Laway BA, Sofi BA, Wani AI. Seroprevalence of toxoplasmosis in women with repeated abortions in Kashmir. J Epidemiol Community Health. 1998;52:135-6.
13. Jones JL, Kruszon-Moran D, Sanders-Lewis K, Wilson M. *Toxoplasma gondii* infection in the United States, 1999-2004, decline from the prior decade. Am J Trop Med Hyg. 2007;77:405-10.
14. Burg JL, Grover CM, Pouletty P, Boothroyd JC. Direct and sensitive detection of a pathogenic protozoan, *Toxoplasma gondii*, by polymerase chain reaction. J Clin Microbiol. 1989;27:1787-92.
15. Peyron F, Wallon M, Bernadoux C. Long-term follow-up of patients with congenital ocular toxoplasmosis. N Eng J Med. 1996;334:993-4.
16. Amsel R, Toten P, Spiegel CA, Chen KC, Eschenbach D, Holmes KK. Non-specific vaginitis: diagnostic techniques and microbial and epidemiologic associations. Am J Med. 1983;74:14-22.
17. Kekki M, Kurki T, Pelkonen J, Kurkinen-Raty M, Cacciatore B, Paavonen J. Vaginal clindamycin in preventing preterm birth and preipartal infections in asymptomatic women with bacterial vaginosis: a randomized, controlled trial. Obstet Gynecol. 2001;97(5 Pt 1):643-8.
18. Adler B, Scrivano L, Ruzcics Z, Rupp B, Sinzger C, Koszinowski U. Role of human cytomegalovirus UL131A in a cell type specific virus entry and release. J Gen Virol. 2006;87(Pt 9):2451-60.
19. Monbro M, Perathoner C, Leone A. Congenital toxoplasmosis: assessment of risk to newborns in confirmed and uncertain maternal infections. Eur J Pediatr. 2003;162:703-6.
20. Montoya JG, Liesenfeld O. Toxoplasmomsis. Lancet. 2004;363:1965-76.
21. Stagno S, Pass RF, Cloud G, Britt WJ, Henderson RE, Walton PD, et al. Primary cytomegalovirus infection in pregnancy. Incidence, transmission to fetus and clinical outcome. J Am Med Assoc. 1986;256:1904-8.
22. Brown LA, Selke SA, She J. Acquisition of herpes simplex virus during pregnancy. N Engl J Med. 1997;337:509-15.

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