Bad Obstetric History : A Prospective Study

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Abstract

Background: Death of an infant in utero or at birth has always been a devastating experience for the mother and of concern in clinical practice. Perinatal mortality remains a challenge in the care of pregnant women worldwide, particularly for those who had history of adverse outcome in previous pregnancies. To assess the risk factors and outcome of pregnancies in cases of bad obstetric history (BOH) and compare the results with control group, this study was undertaken.

Methods: A prospective study from 2003 to 2007 was carried out in 79 pregnancies having BOH (history of unexplained stillbirth/neonatal death, three or more consecutive abortions etc). Test group was analyzed in terms of age, gravida, parity, risk factors and outcome in terms of preterm delivery, stillbirth, mode of delivery, birth weight, pregnancy complications and fetal distress. These parameters were compared with a systematic, randomly selected sample from rest of the deliveries. Necessary advice and treatment was given in cases of hypothyroidism, hypertension, antiphospholipid antibody (APLA) syndrome, gestational diabetes and other risk factors.

Result: There was significantly higher incidence of malpresentations, hypertension, APLA, cervical incompetence, preterm deliveries and caesarean section in test group ($p < 0.05$). In this study, only 47 (59.49%) women out of 79 in BOH group were identified to have possible factor responsible for pregnancy losses. In 32 (40.51%), no probable causes could be identified. Nine (11.39%) patients were identified with more than one risk factor.

Conclusion: APLA, hypertension, malpresentation, cervical incompetence, preterm deliveries and caesarean section were found significantly more in BOH group. In a large percentage of pregnancies with BOH, the risk factors for adverse outcome were not identified but pregnancy outcome was generally good in subsequent pregnancies with optimal antenatal care and advice.

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Key Words : Bad obstetric history; Antiphospholipid antibody syndrome; Gestational diabetes; Stillbirth

Introduction

Pregnancy loss is a frustrating and challenging problem for couples and clinicians alike. Miscarriage is often associated with guilt, embarrassment and depressive states. This is particularly true when the patient presents with subsequent pregnancy with added concerns of primary or secondary infertility, irregular menses, absent or irregular ovulation, a known history of uterine fibroids, a family history of miscarriage, advancing age, medical history and a prior history of pregnancy complications. It certainly warrants a detailed consultation and reassurance with a practitioner committed to pregnancy loss evaluation.

A significant immunologically mediated contributor to pregnancy loss is the anti-phospholipid antibody (APLA) syndrome. This syndrome reflects a subtle autoimmune condition that can lead to enhanced clot formation in certain micro vessels with low flow or low pressure. It is believed that APLA can bind to phospholipids in the lining of blood vessels, platelets and trophoblasts in the placenta, leading to thrombosis. When

thrombosis occurs in the early microvasculature of the implanting placenta and endometrium, the pregnancy does not receive adequate nourishment, gas exchange or blood flow. An otherwise normal pregnancy can miscarry at any stage of pregnancy. Women with APLA are at higher risk in later pregnancy of pre-eclampsia, fetal growth retardation and fetal demise.

The emotional issues surrounding pregnancy loss become magnified exponentially when miscarriage occurs on a repetitive basis. When evaluation of women for recurrent pregnancy loss is done, an underlying contributing factor can be identified in 40-50%. If a contributing factor is found and treated, the prognosis for successful pregnancy outcome is typically around 80%. Even in couples where no underlying problem is found, the chances for a successful pregnancy can typically be in the 50-70% range. If a couple had a normal pregnancy and delivery previously, the prognosis tends to be better.

It is estimated that 50-60% of all first trimester pregnancy losses harbor a chromosomal abnormality,

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which leads to abnormal growth and development of the pregnancy. The large majority of these abnormal pregnancies fail in the first trimester. Maternal age is generally believed to be a significant factor leading to potentially abnormal egg development and genetic make-up of the pregnancy. In some instances, either the maternal or paternal chromosomal make-up can predispose couples to chromosomally abnormal pregnancies.

A common aspect of the evaluation to uncover causes for miscarriage will typically involve inspection of the macro and the micro environment within the uterus. If a pregnancy does occur, the endometrium must develop optimally to provide ongoing attachment and nourishment for the developing pregnancy. Any process, which interferes with normal embryo-endometrium interaction can lead to pregnancy failure.

Acquired problems could include polyps, fibroids and adhesions, which even if small, could interfere with an otherwise normal pregnancy. Congenital uterine problems include the septate uterus, bicornuate uterus or a T-shaped uterus (related to in-utero diethylstilbestrol (DES) exposure).

Gestational diabetes mellitus (GDM) is defined as abnormal glucose tolerance during pregnancy. GDM can be associated with significant morbidity and mortality in the fetus and newborn.

Recurrent miscarriage (RM ≥ 3 consecutive early pregnancy losses) affects around 1% of pregnancies. Parental chromosomal anomalies, maternal thrombophilic disorders and structural uterine anomalies have been directly associated with recurrent miscarriage. However, in the vast majority of cases the pathophysiology remains unknown.

Material and Methods

A prospective study was carried out from 2003 to 2007 in 79 pregnancies having BOH (history of stillbirth/ neonatal death, three or more consecutive abortions etc). Test group was analyzed in terms of age, gravida, parity, risk of preterm delivery, intra uterine growth retardation (IUGR), stillbirth, mode of delivery, birth weight and fetal distress. These parameters were compared with a systematic, randomly selected sample of 300 from the rest of total 1500 deliveries. Necessary advice and treatment was given in cases of hypothyroidism, hypertension, APLA syndrome, GDM and other risk factors. Statistical analysis was done using Fisher's exact test.

Results

Incidence of BOH was found to be 5.27%. Table 1 shows that there was no significant difference between two groups regarding age, parity, body mass index and birth weight of newborn ($p > 0.05$).

Table 1

Comparison between BOH group and control group

	Control group n=300	BOH group n=79	t value of difference	p value
Age				
Mean	25.078	25.4557	-0.913	0.1817
SD*	3.2363	3.2769		
BMI				
Mean	24.3982	22.9437	4.731	0.9999
SD	3.5125	2.0539		
Parity				
Mean	1.3809	1.2435	1.555	0.9390
SD	0.6690	0.7059		
Birth weight				
Mean	2.9726	2.8873	1.441	0.9244
SD	0.3743	0.4896		

*SD-Standard deviation.

Table 2 is the comparison between two groups in maternal and fetal complications. APLA (10.13% vs 4%, $p < 0.05$), hypertension (20.25% vs 5.33%, $p < 0.01$), malpresentation (7.59% vs 2.33%, $p < 0.05$), cervical incompetence (5.06% vs 0%, $p < 0.01$), preterm deliveries (17.72% vs 6.33%, $p < 0.01$) and caesarean section (62.02% vs 22.67%, $p < 0.01$) were found significantly more in BOH group. Though hypothyroid (7.59% vs 5%, $p > 0.05$), GDM (2.53% vs 2.33%, $p > 0.05$), premature rupture of membranes (PROM) (15.19% vs 10.33%, $p > 0.05$), fetal distress (11.39% vs 8.67%, $p > 0.05$) and meconium stained liquor (MSL) (18.99% vs 15%, $p > 0.05$) were found more in BOH group but none of them were found to be statistically significant.

Discussion

Overall incidence of BOH in literature is variable with large etiological heterogeneity. Depending on age of the parents and many other confounding variables e.g. repeated biochemical pregnancy losses, inclusion of two successive pregnancy losses in the test group may lead to different results and conclusion. There is strong evidence that patients with few miscarriages (two) are different from those with many miscarriages (four or more) with regard to etiological factors [1, 2]. Two early miscarriages are experienced by so many women that it should be considered a normal phenomenon that is most likely caused by de-novo fetal chromosome abnormalities occurring twice by chance. Fifty percent of culturable tissue samples from miscarriages occurring sporadically have chromosome abnormalities. On the other hand, the theoretical risk of experiencing recurring pregnancy loss (RPL) as a consequence of consecutive chromosome-abnormal miscarriages declines rapidly with the number of pregnancy losses and in accordance with this, the overwhelming majority of abortuses from patients with four or more miscarriages are found to have normal karyotype [3-5]. In this study incidence of BOH was found to be 5.27%, including 21 (1.4%) for

Table 2**Comparison between BOH group and control group in medical complications and fetal outcome**

	Control group (n=300)	BOH group (n=79)	Fisher exact test p value	Relative risk
Anti phospholipids antibody (APLA) ##	12 (4%)	8 (10.13 %)	0.044**	2.532
Hypothyroid	15 (5%)	6 (7.59 %)	0.406	1.519
Tuberculosis under treatment	3 (1%)	1 (1.26%)	1	1.266
Gestational diabetes mellitus (GDM)	7 (2.33%)	2 (2.53%)	1	1.085
Hypertension \$	16 (5.33%)	16 (20.25%)	0.000**	3.797
Premature rupture of membranes (PROM)	31 (10.33%)	12 (15.19%)	0.234	1.470
Ante partum haemorrhage (APH)	14 (4.67%)	2 (2.53%)	0.540	0.542
Malpresentation	7 (2.33%)	6 (7.59%)	0.034**	3.255
Cervical incompetence ***	0	4 (5.06%)	0.002**	infinite
Fetal distress #	26 (8.67%)	9 (11.39%)	0.512	1.315
LSCS	68 (22.67%)	49 (62.02%)	0.000**	2.736
Vacuum/forceps delivery	21 (7%)	4 (5.06%)	0.799	0.723
Meconium stained liquor (MSL)	45 (15%)	15 (18.99 %)	0.389	1.266
Preterm delivery	19 (6.33%)	14 (17.72%)	0.003**	2.798
Still birth	1 (0.33%)	0	0.000	

Significant, *funneling of cervix in USG between 20-30 weeks of pregnancy, history of cervical incompetence in previous pregnancy, # as manifested by fetal bradycardia, variable or late decelerations, ## high levels of APLA and/ or anticardiolipin antibody and/or lupus anticoagulant and/or prolonged activated partial thromboplastin time (aPTT), \$ includes chronic hypertension and pregnancy induced hypertension (PIH).

recurrent pregnancy losses and 58 (3.87%) with history of unexplained stillbirth or neonatal loss.

Age, obesity and high parity have been shown to be independent risk factors for RPL and stillbirth. In this study there was no significant difference between two groups statistically. However, an increasing risk of fetal loss with increasing maternal age has been documented in women aged more than 30 years. At 42 years of age, more than half of all pregnancies resulted in a spontaneous abortion, ectopic pregnancy or stillbirth [6]. The incidence of spontaneous abortion varies according to a woman's parity and number of spontaneous abortions in the preceding ten years. After three or more spontaneous abortions, the proportion of pregnancies ending in spontaneous abortion increased to 44.6% in nulliparous women and 35.4% in parous women [6]. Obesity is known to be associated with increased rates of complications in late pregnancy such as preterm deliveries, neonatal deaths, stillbirth, caesarean delivery and GDM [7].

Studies have shown that mothers with BOH were four times likely to deliver a low birth weight (LBW) baby [8]. Perhaps genetic factors and socioeconomic factors were the reasons for this phenomenon leading to repeat adverse obstetric outcome [8]. However this was not seen in our study. It may be because of absence of socioeconomic disparity and early intervention to correct adverse factors whenever identified.

APLA syndrome refers to a varied group of autoantibodies including lupus anticoagulants and anticardiolipin antibodies. These are frequently associated with a history of repetitive fetal deaths.

Extensive infarcts, necrosis and thrombosis have been identified in the placentae of miscarried fetuses of women suffering from APLA syndrome. Treatment for APLA syndrome generally requires daily low dose aspirin and heparin during pregnancy. One recently published study demonstrated an 80% success rate for treatment of APLA syndrome by this approach [9]. In our study prevalence of APLA in test group was 10.13% and after treatment with low dose aspirin and heparin the outcome was good in all cases.

Overt hypothyroidism in pregnancy is rare because of its association with anovulation and infertility. The incidence of hypothyroidism during pregnancy is reported to be 1% [9]. In our study incidence was high (7.59% vs 5%) as our hospital is a referral centre. However it was not found significant ($p < 0.05$) in our study. But in other studies hypothyroidism has been associated with suboptimal obstetric outcome [10]. There was higher incidence of tuberculosis (1.26% vs 1%) and GDM (2.53% vs 2.33%) in BOH group but none of it was found statistically significant.

In this study, hypertension (20.25% vs 5.33%, $p < 0.01$) was found a statistically significant factor in BOH group as also seen in other studies [11,12]. Hypertension with proteinuria leads to reduced plasma volume and reduced supply of nutrients to the growing fetus resulting in higher still births and preterm labors leading to prematurity and neonatal deaths.

PROM (15.19% vs 10.33%, $p > 0.05$), a risk factor for preterm delivery and neonatal infection, was identified more frequently in test group than control group, though difference was not statistically significant. No significant

difference was found in incidence of ante partum haemorrhage (APH) between two groups [12]. Low incidence in BOH group (2.53% vs 4.67%, $p > 0.05$) suggests that APH may not be an important factor in BOH in this study.

Malpresentation (7.59% vs 2.33%, $p < 0.05$) and cervical incompetence (5.06% vs 0, $p < 0.01$) were found significantly higher in BOH group. All women diagnosed to have cervical incompetence were given cervical encirclage and pregnancy outcome was good. High incidence of uterine anatomic anomalies predisposes to cervical incompetence and malpresentations [13]. Since in control group most of the deliveries (76.33%) were vaginal and patients reported with pregnancy, tests for uterine anomalies e.g. hysterosalpingogram could not be carried out. Pregnancy outcome in terms of fetal distress, caesarean delivery, vacuum/forceps, meconium stained liquor and stillbirth was not found significantly different between two groups. However, preterm delivery rate was significantly higher in BOH group ((17.72% vs 6.33%, $p < 0.01$), due to higher incidence of various factors predisposing to preterm deliveries both spontaneous and induced e.g. hypertension, APLA syndrome, PROM, cervical incompetence etc.

In this study, only 47 (59.49%) women out of 79 in BOH group were identified to have possible factors responsible for pregnancy losses. In 32 (40.51%), no probable causes could be identified [14]. Nine (11.39%) patients were identified with more than one risk factor. APLA, hypertension, malpresentation, cervical incompetence, preterm delivery and caesarean section were found significantly more in BOH group. In a large percentage of pregnancies with BOH, the risk factors for adverse outcome were not identified but pregnancy outcome was generally good in subsequent pregnancies with optimal antenatal care and advice.

Conflicts of Interest

None identified

Intellectual Contribution of Authors

Study Concept : Lt Col G Singh

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References

1. Pfeiffer KA, Dimmers R, Engels G, vande Venn H, Vendeer Venn K. The HLA-G genotype is potentially associated with idiopathic recurrent spontaneous abortion. *Mol Hum Reprod* 2001; 7:373-8.
2. Kruse C, Rosgaard A, Steffensen R, Varmint K, Jensen us JC, Christiansen OB. Low serum level of manna-binding lection is a determinant for pregnancy outcome in women with recurrent spontaneous abortion. *Am J Obstetric Gynecol* 2002; 187: 1313-20.
3. Christiansen OB. A fresh look at the causes and treatments of recurrent miscarriage, especially its immunological aspects. *Hum Reprod Update* 1996; 2:271-93.
4. Christiansen OB, Pedersen B, Rosgaard A, Husth M. A randomized, double-blind, placebo-controlled trial of intravenous immunoglobulin in the prevention of recurrent miscarriage: evidence for a therapeutic effect in women with secondary recurrent miscarriage. *Hum Reprod* 2002; 17: 809-16.
5. Ogasawara M, Aoki K, Okada S, Suzumori K. Embryonic karyotype of abortuses in relation to the number of previous miscarriages. *Fertil Steril* 2000; 73:300-4.
6. Andersen AMN, Wohlfahrt J, Christens P, Olsen J, Melbye M. Maternal age and fetal loss: population based register linkage study. *BMJ* 2000; 320:1708-12.
7. Smith GCS, Shah I, Pell JP, Crossley JA, Dobbie R. Maternal Obesity in Early Pregnancy and Risk of Spontaneous and Elective Preterm Delivery. A Retrospective Cohort Study. *Am J Public Health* 2007; 97:157-62.
8. Anand K, Garg BS. A Study of Factors Affecting LBW. *Indian Journal of Community Medicine* 2000; 25: 4-6.
9. Spegiorin LCJF, Godoy JMP, Orlani AH. Evaluation of prophylaxis using low doses of heparin associated with aspirin in pregnancy with multiple miscarriages and high antiphospholipid antibody levels - preliminary report. *Arch Med Sci* 2007; 3 :43-5.
10. Aziz N, Reddy P, Fernandez E. Hypothyroidism in pregnancy: Is universal screening needed? *J Obstet Gynecol India* 2006; 56: 495-8.
11. Deodhar J, Jarad R. Study of the prevalence of and high risk factors for fetal malnutrition in term newborns. *Annals of Tropical Paediatrics: International Child Health* 1999; 19 : 273-7.
12. Surkan PJ, Stephansson O, Dickman PW, Cnattingius S. Previous Preterm and Small-for-Gestational-Age Births and the Subsequent Risk of Stillbirth. *N Engl J Med* 2004; 350: 777-85.
13. Salim R, Regan L, Woelfer B, Backos M, Jurkovic D. A comparative study of the morphology of congenital uterine anomalies in women with and without a history of recurrent first trimester miscarriage. *Human Reproduction* 2003; 18: 162-6.
14. Stephenson MD. Frequency of factors associated with habitual abortion in 197 couples. *Fertil Steril* 1996; 66:24-9.