Research Article

Analysis of risk factors of stillbirth: a hospital based study in a tertiary care centre

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ABSTRACT

Background: Stillbirth is an indicator of maternal health and maternal health care services. Developing countries have high stillbirth rate. Documentation and evaluation of the risk factors for stillbirth is required for management of the risk factors and to devise plan in maternal health sector.
Methods: It was a hospital based retrospective study carried out in a tertiary care hospital. Inclusion criteria were a case of fetal death with gestational age ≥20 weeks or fetal weight ≥ 500gm.
Results: Total birth during the study period was 5132 and stillbirth 282. Stillbirth rate was 5.4% (54/1000). Majority of patients were primigravida (52.59%). Risk factors were detected in 164 (60.74%). Incidence of some of the risk factors were hypertensive disorder of pregnancy 46 (17.03%), antepartum haemorrhage 33 (12.22%), IUGR 11 (4.07%), Malpresentation 15 (5.55%) and fetal anomalies 4 (1.48%). Stillbirth without risk factors was 106 (39.25%).
Conclusion: Majority of the risk factors found in the present study were preventable. Stillbirth rate can be reduced by proper management of these risk factors during antenatal care and intrapartum care.

Keywords: Stillbirth, Risk factors, Gestational age

INTRODUCTION

Stillbirth is an unacceptable event for the expecting mother as well as obstetrician. Both the woman and the obstetrician become desperate to know the cause of intrauterine fetal death (IUFD) death and the means to prevent it in future.

According to the International Classification of Diseases, 10th revision (ICD-10)"Fetal death" means death prior to the complete expulsion or extraction from its mother of a product of human conception, irrespective of the duration of pregnancy and which is not an induced termination of pregnancy. The death is indicated by the fact that after such expulsion or extraction, the fetus does not breathe or show any other evidence of life, such as beating of the heart, pulsation of the umbilical cord, or definite movement of voluntary muscles. Heartbeats are to be distinguished from transient cardiac contractions; respirations are to be distinguished from fleeting respiratory efforts or gasps.[1] Although birth weight has been the preferred criterion in the ICD to identify a late fetal death, gestational age is an additional requirement for reporting for international comparative purposes. ICD classifies late fetal deaths (greater than 1000 gms or after 28 weeks) and early fetal deaths (500 to 1000 gms or 22-28 weeks) The definition of stillbirth is different in different countries. This difference is in lower limit of gestational age. The lower limit in United States of America is 20 completed weeks of gestation. The lower lmit is 28 weeks of gestation in India. The definition of stillbirth recommended by WHO for international comparison is a baby born with no signs of life at or after 28 weeks' gestation.[2]

In 2009 there were over 2.6 million stillbirths globally, with more than 8200 deaths a day. The majority of these deaths occur in developing countries.[2] The rate of

stillbirth varies among countries of different income-categories. Variation in stillbirth rate also exists among the same income category countries. Stillbirth rate in India is 7 per 1000 birth.[3]

Many risk factors for stillbirth have been identified by studies carried out across different countries, hospitals and population. Sociodemographic factors and health care delivery related variables like poverty, lack of education, pre-pregnancy obesity, advanced maternal age, lack of antenatal care, smoking have been implicated in stillbirth.[3-6] Exposure to high levels of fine particulate air pollution in the third trimester of pregnancy is reported to be associated with increased stillbirth risk.[7] However pregnancy complication or feto-placental pathology are the major cause of fetal death.The pregnancy complication commonly associated with IUFD as reported in literature are preeclampsia, antpartum haemorrhage (APH), oligohydramnios, intrauterine growth restriction (IUGR).[6,8,9] Helgadottier LB found 68% of the cases the major cause of fetal death was placental pathology(IUFD8).[10] Factors or determinants of antepartum or intrapartum fetal death are not similar. Antepartum fetal deaths are usually due to maternal or feto-placental factors. Intrapartum death may be due to lack of good quality obstetric practice. While timely termination of pregnancy by induction or caesarean section can prevent antepartum fetal death, close monitoring of labor and fetus can prevent intrapartum fetal death. Knowledge of etiological factors or risk factors or pregnancy related complications leading to fetal demise are essential to formulate appropriate strategy to prevent this tragic event. The study was undertaken to document the maternal characteristics and maternal and fetal variables associated with stillbirth.

METHODS

Setting

Department of Obstetrics and Gynaecology, Assam Medical College, Dibrugarh. Majority of the patients attending this hospital are from rural area. Patients come from neighbouring state of Nagaland and Arunachal Pradesh also.

Design

Retrospective hospital based study. Study period was six month from September 2015.

Selection criteria

A case of fetal death with gestational age ≥20 weeks or fetal weight ≥500gm.

Exclusion criteria

Cases were excluded if gestational age was <20 weeks.

Case definition

Fetal death is considered as stillbirth in cases of fetus weighing 500gm or more and / or gestational age 20 weeks or more.

Data were collected from hospital records.

Statistical study

Data were tabulated and analysed as percentages.

RESULTS

The total number of deliveries during the study period was 5132 and stilbitrh was 282. Data could not be collected in detail in 12 cases; these 12 cases were excluded from analysis. Two hundred seventy cases were taken up for analysis.

The majority of patients were primigravida 142 (52.59%).

The patients with gestational age 37─40 weeks were 111 (41.11%). The patients with 20 to < 37 weeks were 136 (50.37%). Gestational age of 23 patients was > 40 weeks.

Table 1: Gestational age.

Gestational age	Number	Percentage
< 28 weeks	19	7.03
28 - <34 weeks	66	24.44
34 - <37 weeks	51	18.88
37 - 40 weeks	111	41.11
>40 weeks	23	8.51

Table 2: Fetal characterstics.

Birth weight		
Birth weight	Number	Percentage
< 1 kg	27	10
1 kg - <2.5 kg	164	60.74
≥ 2.5 kg	79	29.25
Sex of baby		
Male	144	53.70
Female	126	46.29
Mode of deliveries		
Vaginal deliveries	233	86.29
Caesarean deliveries	35	12.96

The different types of maternal diseases, fetal disorder or placental pathology detected were shown in the table 3. The number of patients having hypertensive disorder of pregnancy (HDP) was 46 (17.03%), Eclampsia 25 (9.25%), Antepartum haemorrhage (APH) 33 (12.22%), Post-dated pregnancy 20 (7.40%), IUGR 11 (4.07%), Malpresentation 15 (5.55%), severe anaemia 9 (3.33%), Twin 7 (2.59%), congenital malformation of fetus 4

(1.48%), and post caesarean pregnancy 11 (4.07%) and Oligohydramnios 2 (0.74%). There was one patient with diabetes mellitus, one patient jaundice, one patient traumatic paraplegia and one patient burn injury.
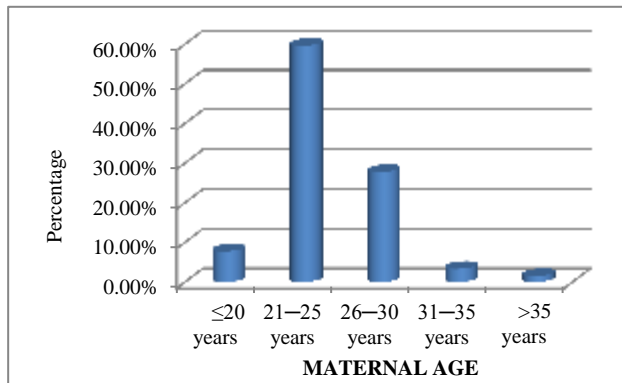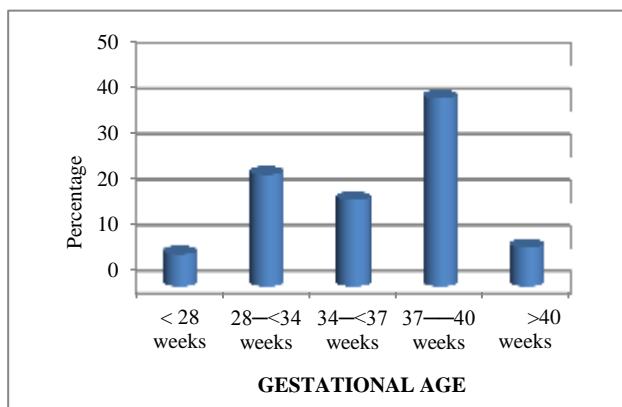

Figure 1: Maternal Age.

Figure 2: Gestational age.

Table 3: Risk factors of stillbirth.

Risk Factors	Number	Percentage
Hypertensive Disorder	46	17.03
Eclampsia	25	9.25
Antepartum Haemorrhage	33	12.22
Postdated Pregnancy	20	7.40
Malpresentation	15	5.55
IUGR	11	4.07
Post-Cesarean Pregnancy	11	4.07
Severe Anaemia	9	3.33
Fetal Anomaly	4	1.48
Oligohydroamnios	2	0.74

Stillbirth with risk factors was 164 (164/270, 60.74%). Two or more risk factors were detected in 35 (35/270; 12.96%).

The mode of deliveries was vaginal in 233 (86.29%) cases and caesarean 35 (12.96%) cases. Two patients had laparotomy for caesarean scar rupture.

The number of male and female fetus was 144 (53.70%) and126 (46.29) respectively.

The birth weight of maximum baby was in the range of 1 kg to < 2.5 kg 164 (60.74%).

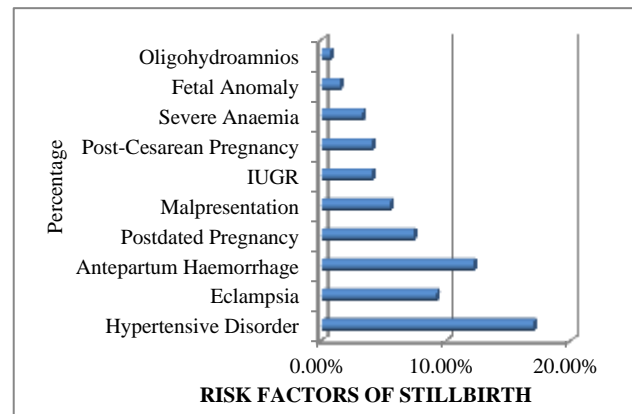Multigravida having past history of abortion was 31 (11.48%).
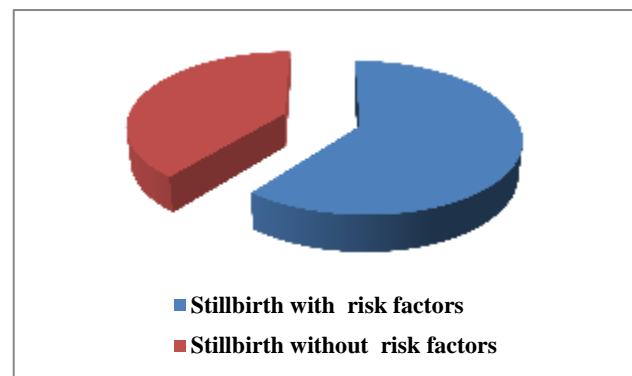

Figure 3: Risk factors of stillbirth.

Figure 4: Stillbirth with and without risk factors.

DISCUSSION

Stillbirth is an important indicator of maternal health, availability and accessibility of healthcare delivery system and socioeconomic condition. In the present study stillbirth rate was 5.4% (282/5132). The incidences found in different studies are Taiwan 0.98%, Bangladesh 39.1/1000, India 43/1000.[11,6,12] The very high rate found in this study might be because this hospital is functioning as the lone referral hospital for a large area including neighbouring states and all the high risk cases are referred to this hospital.

The highest number of cases (53%) was in the age group of 21-25 years and from rural area. The advanced maternal age reported to be associated with stillbirth was not observed in this study. Pregnant woman of advanced age is not common in our society particularly in rural

area. Different studies have shown different age group of woman having maximum number of stillbirth.[12-14]

The majority of patients were primigravida 53.2%. Primigravida reported by other studies are 39.2%, 38.2%.[13,15] Woman with past history of abortion was 11.32%.

The second common risk factor was antepartum haemorrhage 12.2%. Studies carried out in India by Singh found placenta praevia in 3.37% & placental abruption 6.75%, and Avachat found APH in 32% cases.

Hypertensive disorder of pregnancy including eclampsia (26.79%) was the leading risk factor. Other studies have reported similar finding (28.6%, 33.7%).[12-13]

In the present study the number of baby having congenital fetal malformation was 1.59%. Incidence found in other studies were much higher (11.5%), (13.22%) and 32.14%.[11,13,16] Congenital malformation of fetus can be diagnosed by ultrasonography in early pregnancy and medical termination of pregnancy can be performed. So anomaly scan can significantly contribute to reduce the burden of stillbirth

Stillbirth without maternal or fetoplacental risk factors was 106 (39.25%). The unexplained stillbirth in different studies are 19.5%, 23.14%, 38.7%.[11-12,16] Autopsy might have revealed cause of death in some of the cases. Nayak SR reported that 58% cases autopsy added significantly to the diagnosis.[13]

Preterm stillbirth with gestational age between 28-37 weeks was 114 (43%).Various studies have shown various incidence of prematurity in cases of stillbirth 44.4% ,34.05%[15,17] Prematurity was the cause or effect of fetal death was not evident in all cases.

The number of postcaesarean pregnancy was 11 (4.15%). There were two cases of rupture uterus in postcaesarean pregnancy. The finding of different studies on association of postcesarean pregnancy and stillbirth is conflicting.[18-20]

Severe anaemia was found in 3.33% cases. Patel reported anaemia in 11.2% and Anjali found severe anemia in 15.24% cases.[12,16]

The gestational age of 7.76% cases was more than 40 weeks. Timely intervention during antenatal care could have prevented stillbirth in these cases.

Case of stillbirth due to syphilis and Rh isoimmunisation was not found.

CONCLUSIONS

Pregnancy complications or maternal disorders were found to be most commonly associated risk factors of stillbirth. Majority of woman were from rural background and belonged to lower socioeconomic section of society. These maternal disorders can be detected early and properly managed through antenatal care services. So the issue of availability and accessibility of adequate antenatal care for the socioeconomically weaker section of society need to be addressed.

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