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Original Research Article

STILL BIRTH : A RETROSPECTIVE STUDY ON ASSOCIATED RISK FACTORS AND OBSTETRIC COMPLICATIONS

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Abstract

Background: Still birth is defined as antipartum death beyond the period of viability. Different countries use different cut off for the minimum number of weeks the pregnancy must last to be classified as a stillbirth, WHO take this cut off as 22 weeks. Stillbirth is caused by various factors which can be obstetrical, fetal, maternal and placental. maternal obstetrical complications like Preeclampsia, eclampsia, anemia, overt diabetes, obesity, cholestasis of pregnancy are high risk factors for stillbirth. **Materials and Methods:** This is a retrospective observational study conducted on pregnant women with Intrauterine fetal demise during study period of 7 years from 1st January 2015 to 31st December 2021 at a tertiary referral centre. The parameters assessed were age, parity, gestational age and the probable etiology. **Result:** There were a total 7141 deliveries during the study period, out of which 297 were identified as stillbirth as per inclusion criteria. The most common maternal cause of still birth was Hypertensive disorders (34.3%) followed by Intrahepatic cholestasis (22.8%), intrauterine infecions (15.4%) and idiopathic/Unexplained category (32.9%). The most common fetal cause was FGR (14.1%). **Conclusion:** In our study, the incidence of stillbirth was found to be 41.5 per 1000 live birth, with highest rate during COVID pandemic. The most common attributed cause was hypertensive disorders of pregnancy, intrauterine infections and Intrahepatic cholestasis, which can be prevented by early referrals, prompt diagnosis and timely interventions.

INTRODUCTION

Still birth is a disturbing condition for the care giver and mother with profound psychological impact on mental health of mother. Still birth is defined as antipartum death beyond the period of viability. Different countries use different cut off for the minimum number of weeks the pregnancy must last to be classified as a stillbirth. WHO defines stillbirth as baby born with no science of life beyond 22 weeks of pregnancy. According to WHO data there were 2 million still birth globally in 2021 alone, while India recorded 0.34 million still birth with stillbirth rate of 13.9 per 1000 live worth which is at par with global still birth rate.[1] Heterogeneity in the definition of stillbirth makes it difficult to compare and accurately assess incidence of stillbirth in different population.

Stillbirth is caused by various factors which can be obstetrical, fetal, maternal and placental Preeclampsia, eclampsia, anemia, overt diabetes, obesity, cholestasis of pregnancy are well recognised maternal factors, whereas fetal growth restriction, congenital anomalies are important fetal factors.[2] Placental causes include abruption and gross placenta anomalies. Approximately 1 in 3 stillbirth have unknown cause.[3] Even in high income advance setups the incidence remained same. Risk factors for stillbirth includes lack of skilled care at birth, low social economic status, poor nutrition and advanced maternal age.

Important test in stillbirth evaluation includes neonatal autopsy chromosomal analysis and examination of placenta and membranes. Findings are usually documented in the medical record. Photographs are taken whenever possible and full radio graph of the foetus called as fetogram may be

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performed.[4] If autopsy and chromosomal evaluation is performed then in up to 35% of stillborn foetus are discovered to have gross structural malformation. Chromosomal micro array analysis (CMA) has replaced standard karyotyping for chromosomal analysis of still born fetuses.[5]

Nonetheless fetal death is psychologically dramatic for a woman and her family. Many of obstetricians advocate the importance of seeing and holding a stillborn foetus for parental psychological well being. Care is co-ordinated through a dedicated nursing team affiliated with labour and delivery.

Identifying the cause of stillbirth will help in counselling patient as well as formulating preventive measures. Those patients with modifiable risk factors for stillbirth such as hypertension or diabetes warrant specific prevention strategies. Women with prior fetal death due to placental insufficiency are at increased risk for subsequent adverse perinatal outcome. As fetal growth restriction is the major contributor of fetal death, so fetal sonography assessment at adequate intervals during antenatal visits is recommended. Delivery at 39 weeks gestation is recommended to avoid neural complications of prematurity.[6] Cesarean Delivery is elected for those with a contraindication to induction. Irrespective of cause of stillbirth it is a well-established fact that adequate prenatal care is associated with better fetal outcome.[7]

The aims and objective of the study is to know the incidence of still birth at the institute and to analyse the cause of stillbirth and associated maternal comorbidities.

MATERIALS AND METHODS

This retrospective observational study was conducted at the department of obstetrics and gynecology, Sharda hospital, Greater Noida, UP. The study population included all stillbirth more than 22 weeks of gestational age. All the pregnant women delivered at the hospital at or after 22 weeks of gestation with stillbirth were enrolled in present study. The study period was from 1st January 2015 to 31st December 2021. The parameters for analysis included maternal age, parity, probable cause of stillbirth, mode of delivery and complications. All the details were thoroughly scrutinized and entered in excel sheet.

The data was analysed for their demographic profile in terms of their age, parity and booking status. Special note of the gestational age at stillbirth and sex of the stillbirth baby was made. Data was also analysed for their previous or existing medical history. The causes of stillbirth were classified into infectious cause, placental cause, fetal cause and intrapatum cause. Intrapartum cause included antipartum hemorrhage and fetal distress. Data on associated maternal obstetrical complications were separately analysed.

Still birth is defined as the death of a fetus at more than or equal to 22 weeks of gestational age or more than 500 gram in birth weight.[8]

Data was analysed with Microsoft Excel and the results were expressed in frequency, percentage and proportion. Statistical analysis was done from Excel sheet using SPSS version 25.0.

RESULTS

There were a total 7141 deliveries during the study period, out of which 297 were identified as stillbirth as per inclusion criteria. Still birth rate was fluctuating between year 2015 to 2018, with 21.6 per 1000 live birth in 2015 and 26.3 per 1000 live birth in 2018. It increased during COVID wave as ours was the only tertiary referral centre in the region. Still birth rate increased to 64.1 per 1000 live birth in 2019 during COVID first wave and increased further to 74 per 1000 livebirth in 2021 in second Stillbirth rate per 1000 live birth is shown in [Table 1].

Table 1: Trend of stillbirth from year 2015-2021

Year	Total Birth (n=number)	Still Birth (n=number)	Still birth rate (per 1000 live birth)
2015	1111	24	21.6
2016	1410	39	27.6
2017	891	22	24.6
2018	1064	28	26.3
2019	1340	86	64.1
2020	704	52	60.2
2021	621	46	74
TOTAL	7141	297	41.50%

Table 2: Demographic details of the study population

Parameters maternal age	Number (N)	Proportion (%)
<20	64	21.50%
20-30	96	32.30%
30-40	104	35.10%
Parity		
≤2	114	38.30%
≥3	136	45.70%
Gestational Age		
≤28weeks	133	44.70%
>28 weeks	164	55.20%

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Booking Status		
Booked	44	14.80%
Unbooked	253	85.10%
Sex- Distribution		
Male	188	63.20%
Female	108	36%
Ambigious	1	0.30%
Birth Weight		
<1000gm	48	16.10%
1000-1500gm	92	30.90%
1500-2500gm	244	82.10%
≥2.5kg	104	35.10%

Table 3: Causes of still birth

Cause of Still Birth	Total Number of Cases (N)	Proportion (%)
Infections / chorioamnionitis	46	15.40%
Intrapartum Causes like Prolonged labor/ obstructed labor/ Meconium with fetal distress	104	35.00%
Congenital Anomalies	18	6.00%
Placental and Cord Abnormalities	22	7.40%
Unexplained	98	32.90%

Table 4: Maternal co-morbidities associated with stillbirth

Associated Maternal Conditions	Number (N)	Proportion (%)
Hypertensive Disorders of Pregnancy	102	34.30%
Chronic Hypertension	12	4.00%
Gestational Diabetes Mellitus	14	4.70%
IHCP	68	22.80%
Anemia	22	7.40%
FGR	42	14.10%
Multiple Pregnancy	31	10.40%

Demographic details of the study population is depicted in [Table 2]. Most of the mothers were in the age group of 30-50 years (35.1%) as compared to 21.5% in age group < 20 yrs and 32.3% in age group of 20-30 years.

Stillbirth occurred more commonly in multi gravida (45.7%) as compared to primary gravida (38.3%). Stillbirth was more common in more than 28 weeks gestation (55.2%) as compared to less than 28 weeks (44.7%). Still birth rate was 85.1% in unbooked patients as compared to 14.8% in booked patients with stillbirth more common in males (63.2%) as compared to females (36%). Most of the stillbirth foetus had birth weight between 1500 to 2500 grams (82.1%) with 16.1% with birth weight less than 1000 gram.

Still birth causes were analysed by total number and proportion and depicted in [Table 3]. Of total 297 cases of stillbirth, Intrapartum causes like prolonged labour/ obstructed labour or fetal distress was identified in 104 out of 297 patients (35%). 46 out of 297 (15.4%) patients had shown sign of infection or chorioamnionitis. 18 out of 297 (6%) had congenital anomalies. Placental or cord abnormalities were identified in 22 patients (7.4%). In 98 out of 297 (32.9%) no obvious cause could be identified.

Maternal co-morbidities associated with stillbirth were also analysed and tabulated in [Table 4]. Hypertensive disorder of pregnancy was observed in 102 out of 297 (34.3%), chronic hypertension in 12 (4%). Diabetes mellitus was identified in 14 out of 297 (4.7%). Intrahepatic cholestasis of pregnancy was seen in 68 out of 297 still birth (22.8%). 22 out of 297 (7.4%) had severe anaemia at the time of presentation to hospital. There were 31 out of 297 (10.4%) stillbirth in mother with twins or triplet pregnancy. Fetal growth restriction was observed in 42 out of 297 (14.1) stillbirth.

DISCUSSION

In the present study the incidence of still birth during study period of 2015 to 2021 was 41.5%. It is comparatively higher than the cumulative incidence of stillbirth in India that is 22 per 1000 live birth.[9] The study site is the only referral centre for the whole district during the study period that explains the higher still birth rate. On comparison the incidence of stillbirth in a study by Gautam S et al,[10] was 55 per 1000 live birth and it was 40 per 1000 live birth for a tertiary care centre in study by Neetu Singh at al.[11] Most of the still birth occurred in time period of 2019 to 2021 emphasizing the impact of COVID on the local population. Most of the mother's were multi gravida as compared to study by Gautam S et al where still birth was more common in primary gravida. In accordance with popular folk believe in the rural region, still birth was high among male fetus (63.2%) as compared to female fetus (36%). In our study still birth rate was higher in the age group > 30 years (35.1%), it is in accordance with study by Neetu Singh et al where still birth rate was more in the age group 30-35 years.

Intrapartum causes were the major contributor of stillbirth in our study (35%). A study done by Goldenberg R L et al,[12] has shown in his study that infection is also one of the major sources of stillbirth

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in developing countries as compared to developed countries. Unusually higher rate of infection in 46 out of 297 (15.4%) were detected in our study, which was attributed to increased local dai handling and more patients with lower socio-economic status being referred to our centre. Fetal congenital anomalies were seen in 6% of stillbirth, which was higher than general incidence of 2 to 3% in the population. A study by P. Shyam,[13] showed the congenital anomalies rate of 1.45% of total stillbirth. Unexplained stillbirth is the major contributor where no obvious cause could be determined and it comprises 32.9% of stillbirth.

In our study stillbirth were marginally higher in multi para (45.7%) as compared to primipara, which was similar to study by sharmistha et al. In our study stillbirth rate was higher in more than 28 weeks of gestation age (55.2%) as compared to 44.7% in less than 28 weeks gestation, which was comparable to study by Aditi et al in 2018,[14] where stillbirth rate were highest in gestation age group of 28-37 weeks. Among causes of stillbirth the commonest cause was Intrapartum events (35%), which can be attributed to maternal obstetric conditions like preeclampsia, abruptio placentae and infection. In a study by Tantengco OG et al,[15] 12.5% cases were due to abruptio placentae. These Intrapartum events are preventable by timely diagnosis and prevention by adequate antenatal care. Hypertensive disorders in pregnancy and infections are high risk factors associated with intrapartum and antepartum reasons for stillbirth.

Stillbirth due to congenital anomalies could be prevented by timely diagnosis of malformation by good level 2 anomaly scan and timely abortion before 20 weeks gestation that can reduce the mental agony of the pregnant mother.

In this study severe anemia was seen in 7.4% of cases, which was similar to Kumar et al,[16] 6.52%. Placental causes were seen in 7.4% of cases in the present study which was similar to study by Bharti et al (7.25%) and lesser than Meena et al (10.52%).[17,18] In the present study preeclampsia and eclampsia was seen in 34% of cases which was higher as compared to Kumar et al (18.2%) and 19% in study by Lawn et al.[19.20] Gestational diabetes mellitus was seen in 4.7% of cases in present study which was similar to other studies by the Dedhrotiya et al,[21] (4%) and Meena et al (4.3%) . In the present study higher incidence of intra hepatic cholestasis of pregnancy (22.8%) was observed. In this study fetal growth restriction was observed in 14.1% cases which was higher than shravya et al (6.67%).[22]

This study gave us an insight into the trend of stillbirth rate and various causes of stillbirth from a tertiary referral centre. The study is limited by its retrospective design and lower number of patients analyzed. This study also showed us the trend of stillbirth during COVID era. This study give us an insight into various obstetrical and placental factors contributing to stillbirth rate.

CONCLUSION

Still birth is often neglected when we talk of perinatal mortality. Most of the cases are from rural population who are unbooked and belong to low social economic status. This indicate that our outreach facilities still need improvement and awareness. Some preventable causes like infections and obstetrical complications like hypertensive disorders can be managed more activity by following strict protocols.

Unexplained stillbirth can be reduced by detailed fetal autopsy, use of genetic testing like micro array, which helps in better prognostication for future pregnancy.

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