

ORIGINAL RESEARCH

Study of prevalence & causes of stillbirths at a tertiary hospitalVishwanath Dange¹, Malathi Verabelly²¹Assistant Professor, Department of Obstetrics and Gynaecology, Malla Reddy Medical College Hyderabad, India.²Associate Professor, Department of Obstetrics and Gynecology, MRIMS, India.

Received Date: 14/11/2022

Acceptance Date: 19/01/2023

ABSTRACT

Background: Pregnancy complications, including anaemia, eclampsia and other hypertensive disorders, antepartum and intrapartum haemorrhage, abnormal fetal position, breech presentation and obstructed labour significantly increase the odds of stillbirth. Present study was aimed to study prevalence & causes of stillbirths at a tertiary hospital. **Material and Methods:** Present study was retrospective, case record-based study, conducted in cases of intrauterine death which were diagnosed during the antenatal period as well as intrapartum deaths. **Results:** During study period, among total 4279 birth, 98 stillbirths were observed, prevalence of stillbirth was 22.9 per 1000 total births. In majority of cases, 21-30 years age group (91.08 %), gravida ≤ 2 (71.43 %) & preterm (80.61 %). Majority required induction of labour (67.35 %), delivered vaginally (88.78 %). Majority of stillbirth neonates were male (56.57 %), had birth weight less than 2.5 kg (81.82 %). Common risk factors noted were hemoglobin less than 9 gm % (50 %), hypertensive disorders of pregnancy (41.84 %) (pre- eclampsia - 31.63 %, gestational HTN 7.14 % & eclampsia 3.06 %), hypothyroidism (15.31 %), antepartum hemorrhage (11.22 %), history of infertility (10.2 %), history of febrile illness in last 7 days (5.1 %), overt diabetes mellites (4.08 %), GDM (3.06 %), jaundice (3.06 %), Rh incompatibility (1.02 %) & multiple pregnancy (1.02 %). Common noticeable causes of stillbirth were hypertensive disorders of pregnancy (23.47 %), antepartum hemorrhage (11.22 %), multifactorial genetic cause (11.22 %), overt diabetes mellites (3.06 %), infections (3.06 %), GDM (2.04 %) & jaundice (2.04 %). Among majority of cases, causes of stillbirth were unknown (43.88 %). **Conclusion:** Common causes of stillbirth were hypertensive disorders of pregnancy, antepartum hemorrhage, multifactorial genetic cause, overt diabetes mellites & infections.

Keywords: stillbirth, hypertensive disorders of pregnancy, antepartum hemorrhage, antenatal care.

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INTRODUCTION

Stillbirth is the birth of a newborn after twenty-eight completed weeks of gestation weighing 1,000 gm or more, with baby showing no signs of life after delivery.¹ Currently, 98% of stillbirths occur in low-to-middle-income countries (LMICs) and India has the highest number of stillbirths, with an estimated 592100 deaths per year, and a WHO estimated rate of 22 per 1000 total births.^{2,3}

Because of advances in medical technology over the last 30 years, prenatal care (medical care during pregnancy) has improved, which has dramatically reduced the number of late and term stillbirth.⁴ Despite extensive evaluations, stillbirths from uncertain reasons account for 25–60% of total events, a rate of 2.8/1000 births.⁵ In term pregnancy, the incidence of unexplained fetal demise could be as high as 0.9/1000 births.⁶

Pregnancy complications, including anaemia, eclampsia and other hypertensive disorders, antepartum and intrapartum haemorrhage, abnormal fetal position, breech presentation and obstructed labour significantly increase the odds of stillbirth.⁷ Early identification of these risk factors and appropriate antenatal care may prevent stillbirths and improve pregnancy outcomes and are used as an important indicator of the quality of care.⁸ Some events are likely associated with stillbirths but despite performing the placental histopathological examination and autopsy, in one forth cases cause cannot be ascertained.⁹ Present study was aimed to study prevalence & causes of stillbirths at a tertiary hospital.

MATERIAL AND METHODS

Present study was retrospective, case record-based study, conducted in Department of Obstetrics and Gynaecology, Malla Reddy Medical College Hyderabad, India. Study duration was of 2 years (January 2020 to December 2021). Study approval was obtained from institutional ethical committee.

We included all cases of intrauterine death which were diagnosed during the antenatal period as well as intrapartum deaths. Intrauterine fetal demise (IUFD) is fetal death that occurs after 20 weeks gestation but before birth. If the gestational age is unknown at the time of death, a fetus that weighs ≥ 500 g is considered an IUFD. Stillborn babies with a birth weight of less than 500 g were excluded from the study.

Maternal details such as age, parity, gestational age, antenatal visits, literacy status, socioeconomic status, occupation, medical disorders, and presence of any associated obstetric complications were noted. Maternal investigations like CBC, blood group and Rh typing, urine routine and microscopic examination, HIV, HBsAg, HCV, VDRL, HbA1c, TFTs, LFT, KFT and coagulation profile were documented. Obstetric ultrasonography (USG) details, intrapartum events, risk factors such as intrauterine growth restriction (IUGR), poly/oligohydramnios, maternal hypertensive disorders of pregnancy, GDM or overt DM, etc. were noted. The mode of delivery, sex, and birth weight of fetuses were noted. Post-partum fetus examination findings for congenital anomalies, any abnormality in placenta or retro placental clot were noted.

The obtained information was analyzed to identify the probable cause of stillbirth. Significance was assessed with all cases of intrauterine device (IUD) with live case with these risk factors. Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Statistical analysis was done using descriptive statistics.

RESULTS

During study period, among total 4279 birth, 98 stillbirths were observed, prevalence of stillbirth was 22.9 per 1000 total births. In majority of cases, 21-30 years age group (91.08 %), gravida ≤ 2 (71.43 %) & preterm (80.61 %).

Table 1: General characteristics

| Characteristics | No. of patients | Percentage |
|-----------------------|-----------------|------------|
| Age groups (in years) | | |
| <20 | 3 | 3.06 |
| 21-25 | 39 | 39.8 |
| 26-30 | 41 | 41.84 |
| 31-35 | 12 | 12.24 |
| 36-40 | 3 | 3.06 |

| | | |
|-----------------|----|-------|
| Gravida | | |
| 1 | 32 | 32.65 |
| 2 | 38 | 38.78 |
| 3 | 21 | 21.43 |
| ≥4 | 7 | 7.14 |
| Booking status | | |
| Booked | 92 | 93.88 |
| Unbooked | 6 | 6.12 |
| Gestational Age | | |
| Preterm | 79 | 80.61 |
| Term | 18 | 18.37 |
| Post-term | 1 | 1.02 |

Majority required induction of labour (67.35 %), delivered vaginally (88.78 %).

Table 2: Termination of pregnancy

| Termination of pregnancy | No. of cases | Percentage |
|--------------------------|--------------|------------|
| Inducing agent | | |
| Spontaneous labour | 32 | 32.65 |
| Induced labour | 66 | 67.35 |
| Mode of delivery | | 0 |
| Vaginal | 87 | 88.78 |
| • VBAC | 7 | 10.2 |
| LSCS | 10 | 7.14 |
| Forceps delivery | 1 | 1.02 |

Majority of stillbirth neonates were male (56.57 %), had birth weight less than 2.5 kg (81.82%).

Table 3: Neonatal characteristics

| Neonatal characteristics | No. of cases (n=99) | Percentage |
|--------------------------|---------------------|------------|
| Gender | | |
| Male | 56 | 56.57 |
| Female | 45 | 45.45 |
| Birth weight (kg) | | |
| <2.5 | 81 | 81.82 |
| 2.5-3.5 | 15 | 15.15 |
| >3.5 | 2 | 2.02 |

Common risk factors noted were hemoglobin less than 9 gm % (50 %), hypertensive disorders of pregnancy (41.84 %) (pre- eclampsia - 31.63 %, gestational HTN 7.14 % & eclampsia 3.06 %), hypothyroidism (15.31 %), antepartum hemorrhage (11.22 %), history of infertility (10.2 %), history of febrile illness in last 7 days (5.1 %), overt diabetes mellites (4.08 %), GDM (3.06 %), jaundice (3.06 %), Rh incompatibility (1.02 %) & multiple pregnancy (1.02 %).

Table 4: Maternal risk factors.

| Risk Factors | No. of cases | Percentage |
|-------------------------------------|--------------|------------|
| Hemoglobin less than 9 gm % | 49 | 50 |
| Hypertensive disorders of pregnancy | 41 | 41.84 |
| • Pre- eclampsia | 31 | 31.63 |
| • Gestational HTN | 7 | 7.14 |

| | | |
|---|----|-------|
| • Eclampsia | 3 | 3.06 |
| Hypothyroidism | 15 | 15.31 |
| Antepartum hemorrhage | 11 | 11.22 |
| History of Infertility | 10 | 10.2 |
| History of febrile illness in last 7 days | 5 | 5.1 |
| Overt Diabetes Mellites | 4 | 4.08 |
| GDM | 3 | 3.06 |
| Jaundice | 3 | 3.06 |
| Rh incompatibility | 1 | 1.02 |
| Multiple pregnancy | 1 | 1.02 |

Common noticeable causes of stillbirth were hypertensive disorders of pregnancy (23.47 %), antepartum hemorrhage (11.22 %), multifactorial genetic cause (11.22 %), overt diabetes mellites (3.06 %), infections (3.06 %), GDM (2.04 %) & jaundice (2.04 %). Among majority of cases, causes of stillbirth were unknown (43.88 %).

Table 5: Causes of stillbirth Cases

| Causes of stillbirth | No. of cases | Percentage |
|-------------------------------------|--------------|------------|
| Hypertensive disorders of pregnancy | 23 | 23.47 |
| Antepartum hemorrhage | 11 | 11.22 |
| Multifactorial genetic cause | 11 | 11.22 |
| Overt Diabetes Mellites | 3 | 3.06 |
| Infections | 3 | 3.06 |
| GDM | 2 | 2.04 |
| Jaundice | 2 | 2.04 |
| Unknown | 43 | 43.88 |

DISCUSSION

Two systematic reviews done by Lawn et al.¹⁰ and Di Mari et al.¹¹ have revealed several risk factors for third trimester stillbirth including: adolescent or elderly pregnancy; grand multiparity; poor maternal nutrition, such as low body mass index or severe anemia; maternal medical conditions during pregnancy; exposure to toxic substances, such as tobacco, use of biomass for cooking or environmental toxins; and socio-economic deprivation, i.e., poor access to healthcare services during pregnancy, either due financial barriers or inadequate access to information.

Compared with other causes of death, an accurate cause cannot often be identified through verbal autopsy or clinical observation, and, in some settings, more than 75% of all stillbirths have unknown causes.^{12,13} For stillbirths, histological evaluation of the placenta is also essential to establish an accurate cause of death, as various placental conditions have been identified as common and important contributors to stillbirth.^{14,15}

Akshata A,¹⁶ studied 213 stillbirths, majority of the stillbirths are associated with severe preeclampsia (58 mothers). Among stillbirths, majority were unknown (28.6%), known causes were MASF (5.6 %), abruption (17.3 %), prematurity and severe IUGR (20.6 %), anomalies (5.2 %), hypertensive disorders of pregnancy (10.7 %) and others (12 %).

In study by D'souza AS et al.,¹⁷ stillbirth rate of 40.63 / 1000 live births. More than 75% of the stillbirths were noted in women between 21 to 30 years of age. Pregnant women who were unbooked (72.5%) had higher rates of stillbirths. More than 80% of the stillbirths were preterm. Anaemia (41.93%), pre-eclampsia (25.8%) and antepartum hemorrhage (24.19%) were the most common maternal risk factors noted in these patients. Maternal factors contributed to 37.5% of the causes of stillbirths. The other causes for stillbirths were

placental factors (32.8%) and fetal factors (6.2%). In 23.43% of the cases the cause was unknown.

In study by Das R et al.,¹⁸ stillbirth rate was 35.6/1000. 93 (96.87%) were antenatal stillbirths and 3 (3.12%) were intrapartum stillbirths. 82 (85.41%) women were unbooked. 85 (90.4%) belonged to low socioeconomic status. 67 (69.79%) were preterm. Maximum 39 (40.62%) belonged to 28-35 weeks of gestational age. The most common cause of Intrauterine death (IUD) was antepartum hemorrhage (17.7%). 14 (14.5%) were abruption and 3 were placenta previa. The second most common cause (14.5%) was the hypertensive disorder of pregnancy. In study by Abha Singh,¹⁹ out of 20,580 deliveries, 600 (2.9%) were stillborn. Maternal cause was noted in 145/600 (24.2%) cases, fetal cause was noted in 181/600 (30.2%), and placental and cord origins were suspected in 128/600 (21.3%) and 12/600 (2%) cases, respectively. In 72/600 (12.0%) cases the reason for stillbirth was unknown and unclassifiable. Among the maternal causes the most common was hypertension (89/600, 14.8%) followed by infection including fever (5.7%); the most common infection was hepatitis. Among the fetal causes birth defect was the most common (106/600, 17.7%) followed by extreme prematurity in 42/600 (7.0%)

In study by Jitendra PG²⁰, incidence of stillbirth was 51 per thousand births. Maternal characteristics shows (45.9%) from the age group of 21-25 yrs, preterm (66.1%), primigravida (51.39 %), & low birth weight babies (65.5 %) observed. Pregnancy induced hypertension (26.48%), Prematurity (18.81%), Medical disorder including Severe anemia (13.8%) & IUGR (9.1%) were most common etiology found among stillbirth.

Makwana NM et al.,²¹ studied 109 stillbirths, prevalence of stillbirth was 16.5 per 1000 total births. Majority of patients belonged to maternal age group of 20-24 years (37.6%), were multigravida (67%), were emergency admissions (66 %). Majority of stillbirth 88(80.7%) were preterm, were weighted from 1000-1499 gram (44.9%), were male (59.6%). Vaginal delivery occurred in 93(85.3%) and 16(14.7%) required surgical intervention. In 21(19.2%) no identifiable cause of stillbirth was found whereas causes identified in 88(80.8%). Stillbirth occurred in 27(24.8%) cases of hypertensive disorder of pregnancy and 24(22%) patients of anaemia. Other causes of stillbirth were Abruption 9(8.2%), IUGR 9(8.2%), oligohydramnios 5(4.6%) congenital malformation 3(2.8%), fever 3(2.7%), placenta previa 3(2.8%), gestational diabetes 2(1.9%), hypothyroidism 2(1.9%) and uterine rupture in 1(0.9%). DIC occurred in 4(3.6%).

Several distal, intermediate, and proximal factors contribute to the high stillbirth rate in LMIC, and these tend to be related to one another. Potential distal factors include illiteracy among women, low socioeconomic status, and delay in seeking care. Intermediate factors may include young or advanced maternal age, lack of awareness about danger signs, poor maternal nutritional status, lack of awareness about danger signs and nonavailability of community resources. Lastly, maternal and fetal medical conditions and inadequately prepared medical facilities act as proximal risk factors for stillbirths.²²

Improving uptake of ANC and timely identification and effective management of maternal and fetal complications could reduce preventable stillbirths. The Government of India has developed an Indian Newborn Action Plan which includes efforts to 'reduce stillbirths to <10 per 1000 births by 2030'.²³

CONCLUSION

Common causes of stillbirth were hypertensive disorders of pregnancy, antepartum hemorrhage, multifactorial genetic cause, overt diabetes mellites & infections. Early identification of the risk factors, providing intensive care and a regular multidisciplinary follow up will reduce the stillbirth rate.

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