

Retrospective Analysis of Risk Factors for Intrauterine Fetal Death in a Busy Zonal Hospital

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Abstract: *Introduction: Stillbirth is a silent tragedy, potential life lost after a period of expectation and excitement. It also has psycho-social impact and future obstetric complications. Though 1/3rd causes are not yet classifiable, some of them are still preventable. Recognition of risk factor and its estimation will lead to prevention of it. Method: Retrospective record review (2017- 2020) of stillbirths in a tertiary care military hospital was done based on available various risk factor like maternal age, parity, abortion history, blood group, sex of the baby, weight of the baby, mode of the delivery and possible cause of the still birth was collected and analyzed. Results: Still birth rate was 6 per 1000 in this hospital. 54% stillbirth occurred in the pregnant women belonged to age group of 20-25 years and almost half of the cases occurred in primigravida cases. In 71% of multipara cases, they had a history of abortion. Most common period of still birth was preterm period (32-37 weeks) (47.4%) and causes were pregnancy induced hypertension (39.5%) followed by gestational hypertension (21%). Conclusion: Stillbirth could be prevented by early recognition of risk factors, more frequent visit of at-risk pregnancy and awareness generation of at-risk mothers like primigravida and young age group.*

Keyword: Stillbirth, Intrauterine death, Perinatal death, Fetal death, Risk factor, Low-middle income country

1. Introduction

Around 2.6 million stillbirths occur worldwide annually among which majority (84%) are from LMIC (low- and middle-income countries).¹ While stillbirth rate (SBR) is ~3 per 1000 live birth in some developed countries², it stands at 22 for India. Every stillbirth is a tragedy, a potential life lost, often remains hidden from society after a period of excitement, expectation, eager questions and planning of a baby. In addition, it has many psycho-social consequences for parents like anxiety, depression, post-traumatic stress disorder and stigmatization.³ According to some estimates, 1/3rd cases of stillbirths are still not classifiable.⁴ But, some data suggest stillbirth is still preventable.² It is never considered as global burden of disease as it is not considered individual death by ICD-10. The woman carries a future risk of having still births if she has a history of having a stillborn baby. This is the reason; stillbirth is a key indicator of quality of care during pregnancy and childbirth. But, the definition of stillbirth varies from country to country and among various organizations leading to difficulty in reporting and comparison of stillbirths.^{5,6}

Every newborn action plan (ENAP) endorsed by WHO aims to reduce stillbirth globally to a target of 12 per 1000 live birth by 2030.⁷ Till the end of 2019, 129 countries achieved the target and most of them belong to high- and middle-income group. In line of this target, India articulated its ambitious INAP (India newborn action plan) to reduce its current rate of SBR from 22 to 'single digit' by 2030. Though, there are multiple causes and risk factors for still birth, it varies from one region to other. Understanding the risk factor and its estimate helps in maximization of resource in preventing still birth.

2. Methods

The department of Obstetrics and Gynecology is one of the busiest departments in the military hospital of Jammu (166 Military Hospital). While the department has 70 beds

officially, the annual admission is approximately 4600 and nearly 2000 delivery conducted by the hospital each year. Booked cases are around 80% among the deliveries.

This is a retrospective record review of still births occurred in the hospital from 1st January, 2017 to 31st December, 2020. The medical files of all stillbirths were reviewed and the relevant data was entered into MS Office excel (2019 version). The causes of the stillbirths were classified according to ICD-PM (International classification of disease- Perinatal mortality). Still birth was considered for baby delivered deadie without any signs of life at ≥ 28 weeks gestation based on last menstrual period corroborated with early obstetric sonography. Live births during the study period were used as the reference group to analyze the risk indicator. Complete expulsion or extraction of product of pregnancy showing signs of life like beating of heart, umbilical pulsation or definite movement of voluntary muscles not mattering to cutting of umbilical cord and detachment of placenta is considered live birth. The criteria for booked status were taken for the index pregnancy having at least three antenatal visits. The data included maternal age, parity, abortion history, blood group, sex of the baby, weight of the baby, mode of the delivery and possible cause of the still birth. Descriptive data analysis was done and variables were reported using counts and frequencies (%).

3. Results

Among the women having still birth, 54% belonged to the age group of 20-25 years. This was the youngest age group in the study population. Only 5% death attributed to advanced maternal age. Half of the still birth occurred to primigravida women. One-fifth of the mother had a history of abortion and among them 71% had at least one abortion. More than 90% cases were booked. While half of the blood group of mothers found to be B+ve only 2.6% still birth occurred to Rh-ve mothers. Nearly 63% of still birth fetus was found to be male. Average weight of the fetuses was

between 2.5 kg and 4 kg i.e. within normal range followed by 34% fetuses in the low birth weight group. More than half of the cases (60%) were preterm fetuses and born to normal vaginal delivery (84%). Emergency LSCS had to be done in 5 (13%) cases due to obstetric related complication.

The commonest cause was Pregnancy induced hypertension (39.5%) followed by gestational diabetes mellitus (21%) in mothers. Fetal distress and abruption placenta found to be least common cause of still birth having a toll of one case each. Intrauterine growth retardation caused still birth in 18% cases.

Table 1: Proportions of various factors associated with stillbirth

		No of patients (n=38)	%
Age (Years)	20-25	20	54%
	26-30	12	31.6%
	31-35	4	11%
	35-40	2	5%
Parity	Primi	19	50%
	G2	8	21%
	G3	9	23%
	G4	1	3%
	G5	1	3%
H/o abortion (n=7)	A1	5	71%
	A2	1	14%
	A3	1	14%
Booking status	Booked	35	92.1%
	Unbooked	3	7.9%
Blood group	O+	7	18.4%
	A+	8	21%
	B+	19	50%
	B-	1	2.6%
	AB+	3	7.9%
Sex of baby	Male	24	63.2%
	Female	14	37.8%
Wt of the baby	<1 kg (ELBW)	2	5.3%
	1-1.5 Kg (VLBW)	4	10.5%
	1.5-2.5 Kg (LBW)	13	34.2%
	2.5-4 Kg (Normal)	18	47.4%
	>4 Kg (Macrosomia)	1	2.6%
Term pregnancy	Extreme preterm (28-32 wks)	5	13.2%
	Preterm (32-37 wks)	18	47.4%
	Term (≥37wks)	15	39.5%
Mode of delivery	Elective LSCS	1	2.6%
	Emergency LSCS	5	13.2%
	NVD	32	84.2%

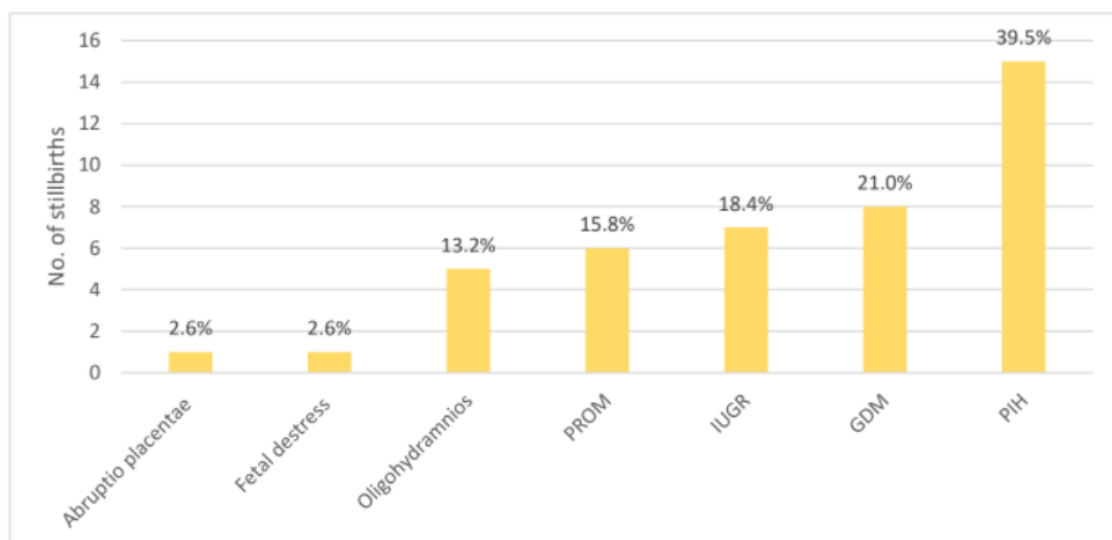


Figure 1: Cause of stillbirth (n=38). (Multiple diagnosis possible). Abbreviations: PROM: Premature rupture of membrane; IUGR: Intrauterine growth retardation; GDM: Gestational diabetes mellitus; PIH: Pregnancy Induced Hypertension

4. Discussion

In this audit, still birth rate was 6 per 1000 live birth well ahead of national figure of 22 per 1000 live birth. This could be due to better socio-economic status, awareness of patients and quality of care provided by the hospital.⁸

With regards to age group of mothers, still birth occurred mostly in youngest age group mothers (20-25 years) and in primigravida cases. Primigravida is a risk factor and with increase in number of pregnancy still birth rate decreases as it was reported in another study by Aminu et al.⁹ Teenage pregnancy was not the risk factor as there were no early pregnancy (15-19 years) reported in this hospital against 8%¹⁰ national average. This might be attributed to better education and socio-economic status of the patients.¹¹ Maternal age above 35 year was found not to be a contributing factor as shown in others studies like Frettset al.¹² The reason could be very less number of cases (only two) in that age group and Indian women tends to complete their family size at an earlier age¹³. In multipara cases, most of them had a history of abortion. While abortion is defined as pregnancy loss ≤ 24 weeks of gestation¹⁴ and still birth after 28 weeks, genetic defect is a major risk factor for both of the adversities as is the possibility in our study. Similar finding is also reported in other studies.^{4, 15}

Booking status of pregnancy, not a limiting factor in preventing still birth implies better access to health care setting. Contrary to our result, access to health care is a major risk factor for stillbirth reported by some authors.¹⁶ Most of the still borne fetuses were found to be male and of normal birth weight. But, considering "period of gestation" 32-37 weeks of gestational age is found to be crucial period as most of the cases occurred to preterm delivery. Prematurity is a major risk factor as is found in other studies.^{9, 17} Male sex can be a risk factor as evident in a study by Mondal et al.¹⁸

Most of the stillborn babies were delivered per vaginally without instrumentation. Similar reporting has been done by Prust et al.¹⁶ Rh factor incompatibility although can play a double-edged sword between induction in prematurity and stillbirth¹⁹, it was not a risk factor in this setting as only 2.6% cases were borne to these type of mothers.

Maternal complication like pregnancy induced hypertension and gestational diabetes caters the largest burden of stillbirth. This is similar to the reporting in other middle-income countries. Though 'unexplained cause' takes precedence of all causes, high-income countries have placental insufficiency and fetal distress as main cause in respect to infection as dominant cause in low-income nations.²⁰ Fetal malformation could be diagnosed early using obstetric sonography leading to its better management and lesser still birth²¹. In most of the studies, 'unexplained cause' amounts to be $\geq 57\%$ of stillbirths and congenital malformation in 25-40% cases¹³. Some of the causes could be assigned by autopsy of the dead babies and radiological assessment in antenatal period. Many a times, couple hesitates for histopathological examination of fetus and autopsy of the stillborn.¹³ Radiological assessment

corroborated with frequent clinical examination can be worthy in these cases²¹.

The study was retrospective and descriptive in nature helping in minimization of bias. But, with certain limitations like population was diverse in nature belonging to various ethnicity, socio-economic status and education level. The deliveries were conducted in a tertiary level military hospital. This will lead to non-generalization of the study result. Fetal malformation or birth defect could not be ascertained due to non-availability of autopsy of stillborn babies. Various other risk factor like consanguinity, smoking and alcohol intake could not be studied. More study is needed regarding cause and risk factor of still birth and its stratification.

No conflict of interest is there declared by the authors.

5. Conclusion

Primigravida in the young age group (20-25 years), pregnant women with h/o previous loss of pregnancy are at higher risk of having still birth. Most common cause of still birth is pregnancy induced hypertension followed by gestational diabetes mellitus that needs to be diagnosed earlier and catered properly. Most of the still births occurred in the preterm delivery (32-37 weeks) which is to be monitored critically by frequent clinical assessment and awareness generation. Additional sonographic assessment during this period may be an extra-mile in the road to prevention of still birth.

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