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Research Article

Clinical study of cases of intrauterine foetal death in a tertiary centre

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ABSTRACT

Background: Foetal death at any stage of pregnancy is a tragic event and one of the unhappy events in the field of obstetrics. The present study was done to determine the probable etiology for antepartum and intrapartum foetal deaths and to study the role of antenatal care in prevention of intrauterine foetal deaths.
Methods: The cases of intrauterine foetal deaths in OBGY department at MGM hospital, Kalamboli and Kamothe with either ultrasound reports proving Intrauterine foetal death (IUFD) or diagnosed on clinical examination by absence of foetal heart rate with gestational age more than 28 weeks by dating from Naegle's rule or by ultrasonography were studied. Inclusion criteria includes as following; 1) All cases of IUFD >28 weeks of gestation; 2) Baby weight of 1000 grams or more and exclusion criteria includes molar pregnancy.
Results: The foetal death rate was 27.76/1000 births. Major causes of IUFD were PE and eclampsia (34.78%), unexplained (14.49%) and abruptio placentae (7.25%). Majority of the stillbirth were seen in preterm pregnancy between 34 - 36 (18.85%) weeks followed by 28 - 30 weeks (17.39%). Majority of foetuses were preterm and of birth weight between 1 - 1.5 kg (28.26%) followed by 1.5 - 2 kg (26.09%).
Conclusions: Present studies showed that majority of IUFDs were preventable. Pre-eclampsia and abruption which are the major causes of IUFD can be reduced by improving education of the patient to avail obstetric care, more frequent visits for high risk pregnancies, timely reference to specialist. Early registration is an important pre-requisite for early detection of risk factors.

Keywords: Intrauterine foetal death, Prevention, Antenatal care, Risk factors, Registration

INTRODUCTION

Foetal death at any stage of pregnancy is a tragic event and one of the unhappy events in the field of obstetrics. While the cause of still births is multifactorial, it is mainly the responsibility of obstetrician to establish the diagnosis and investigate the cause and to determine the risk of recurrence, prevention or corrective action. However, inspite of better antenatal surveillance, institutionalized care, better trained medical personnel and modern gadgets, the incidence of intrauterine foetal death, though declining is still significant.

Since the late 1970s, perinatal mortality has been made up of proportionately more foetal (i.e. still births) than neonatal deaths.[1] The risk of foetal death is known to decline as gestation advances, and foetal death occurs with increased frequency at the extremes of reproductive age, in women with high parity, those with medical problems, smokers and the socially disadvantaged.[2-6]

Certain demographic factors for foetal death include race, low socioeconomic status, inadequate prenatal care, less education and advanced maternal age.[7] Illiteracy, poor socioeconomic condition and social status of women and

misbelieves are important contributory factors responsible for higher foetal mortality rate, as all these prevent women to go to the hospital for health check-up. Ultrasonography to diagnose cord abnormalities, use of intrapartum electronic foetal monitoring, partograph and prevention of prolongation of second stage of labour will help in reduction of stillbirths.[8] The importance of determining the cause of foetal death is that only when the cause is known, the patient can be counselled about the chance of recurrence and attempts at prevention or treatment can be initiated.

With more and more advanced techniques of diagnosis and a better understanding of the pathophysiology of intrauterine foetal demise, have led to the determination of cause of foetal death in more number of cases than in the past. Causes of foetal death like cord accidents have remained unchanged over the decades; causes like antiphospholipid antibodies have been recognized only recently ; causes like chromosomal abnormalities are not totally unpreventable; whereas causes like post maturity, pregnancy induced hypertension, eclampsia, diabetes are preventable or controllable.[9-14] Foetal deaths due to Rh-isoimmunization can be detectable and preventable. Some of these such as syphilis is no longer a problem now.[15]

METHODS

The cases of intrauterine foetal deaths in OBGY department at MGM hospital Kalamboli and Kamothe with either ultrasound reports proving IUFD or diagnosed on clinical examination by absence of foetal heart rate with gestational age more than 28 weeks by dating from Naegle's rule or by ultrasonography were studied.

Inclusion criteria

1) All cases of IUFD >28 weeks of gestation.

2) Baby weight of 1000 grams or more.

Exclusion criteria

It includes molar pregnancy

Important definitions

Live birth

The term used to record a birth whenever the newborn at or sometime after birth breathes spontaneously or shows any other signs of life such as heartbeat or definite spontaneous movement of voluntary muscles.[16]

Still birth

It means the birth of the viable foetus in which respiration does not occur or there are no other signs of life.[16]

Foetal death

Foetal death, as defined by the WHO in 1950 and revised by the working group formed by the American academy of paediatrics and ACOG in 1988 is "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 not an induced termination of pregnancy is. The death is indicated by the fact that after such separation, the foetus 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."[17]

RESULTS

In our study, still birth rate is 27.76/1000 birth (Table 1). Out of the 138 cases, 116 (84.06%) were antepartum deaths and 22 (15.94%) were intrapartum deaths (Table 2). In this study, pre-eclampsia constituted for 29.71% of all still births. PE with eclampsia together accounted for 34.78%; unexplained 14.49%, abruptio placenta 7.25%; breech presentation 5.80%; meconium aspiration syndrome 4.35%; anaemia, oligohydramnios, severe IUGR and diabetes 3.62% each; placenta previa and cord prolapse 2.90% each; congenital anomalies, prolonged and obstructed labour, transverse lie with hand prolapse and infections 2.17% each; thyroid disorders 1.45%; lupus nephritis, rupture uterus, thalassemia and malpresentation 0.72% each (Table 3).

91 stillbirth (65.94%) were preterm and 47 (34.06%) were term gestation. Maximum number of still births occurred at 34-36 weeks gestation (18.85%), followed by 28-30 weeks (17.39%), followed by 38-40 weeks (15.94%). Also, maximum number of still birth is seen in birth weight between 1 to 1.5 kg (27.54%), followed by birth weight between 1.5 to 2 kg (26.09%), followed by 2 to 2.5kg (23.19%). Maximum number of still birth was seen in the age group of 21-30 years (71.74%) (Table 4). Primigravidas (60 patients) had the maximum number of still births when compared to multi and grand-multi.

Still birth was seen more in male babies 78 (56.52%) as compared to female babies 60 (43.48%) (Table 5). Of 138 cases, 96 patients (69.57%) were in labour whereas labour was induced in 42 (30.43%) patients. Out of the 42 patients in whom labour were induced, 24 patients were induced with oxytocin, 10 patients with prostaglandin E2 and 8 patients with misoprostol. 116 patients (84.06%) delivered vaginally, 19 patients (13.77%) undergone LSCS, 2 patients (1.45%) delivered by VBAC and laparotomy was done in 1 patient (0.72%). Out of the 116 patients who delivered vaginally 75 patients (64.66%) had preterm vaginal delivery and 41 patients (35.34%) had full term delivery (Table 6). Among the 19 patients who were delivered by LSCS, placenta previa and prolonged labour constitutes 4 patients (21.05%) each,

followed by transverse lie with hand prolapse and failed induction which constitutes 3 patients (15.79%) each, severe pre-eclampsia 2 patients (10.53%) and obstructed labour, poliomyelitis and cord prolapse (with transverse lie) with 1 patient (5.26%) each.

Out of the total 10 patients who had abruptio placenta, 7 patients (70%) had revealed abruption and 3 patients (30%) had concealed abruption. There are 41 patients of pre-eclampsia of which 17 patients were mild pre-eclamptic and 24 patients were severe pre-eclamptic. Of these; unbooked cases were 28 and booked in 13 cases. Of 7 eclampsia cases, 5 patients were unbooked and 2 cases were booked. All the eclamptic patients delivered vaginally.

Table 1: Intrauterine deaths in the study period.

	Total no. of deliveries	Total no. of IUFDS	Still birth rate (per 1000 birth)
Total	4972	138	27.76%

Table 2: Antepartum and intrapartum still births.

	No. of cases	Percentage (%)
Antepartum	116	84.06
Intrapartum	22	15.94
Total	**138**	**100**

Table 3: Causes of intra-uterine foetal death.

Causes	No. of cases	Percentage (%)
Pre-eclampsia	41	29.71
Eclampsia	7	5.07
Abruptio placenta	10	7.25
Unexplained	20	14.49
Congenital anomalies	3	2.17
Placenta previa	4	2.90
Cord prolapse	4	2.90
Transverse lie with hand prolapse	3	2.17
Infections (Hepatitis B)	3	2.17
Diabetes	5	3.62
Oligohydramnios	5	3.62
Meconium aspiration syndrome	6	4.35
Rupture uterus	1	0.72
Prolonged and obstructed labour	3	2.17
Breech presentation	8	5.80
Anaemia	5	3.62
Thalassemia	1	0.72
Malpresentation	1	0.72
Lupus Nephritis	1	0.72
Thyroid disorders	2	1.45
Severe IUGR	5	3.62
Total	**138**	**100**

Table 4: Birth weight and gestational age distribution of IUFD.

Gestational age in weeks	1000-1500 gms	1501-2000 gms	2001-2500 gms	2501-3000 gms	3000-3500 gms	>3500 gms	Total	Percentage (%)
28-30	21	3	-	-	-	-	24	17.39
30-32	10	7	2	-	-	-	19	13.77
32-34	2	9	3	2	-	-	16	11.59
34-36	4	10	7	5	-	-	26	18.85
36-38	2	3	8	5	-	-	18	13.04
38-40	-	3	8	5	5	1	22	15.94
>40	-	1	4	5	3	-	13	9.42
Total	**39**	**36**	**32**	**22**	**8**	**1**	**138**	**100**
Percentage (%)	28.26	26.09	23.19	15.94	5.80	0.72	**100**	

Table 5: IUFDs and sex of babies

Sex	No. of cases	Percentage (%)
Male	78	56.52
Female	60	43.48
Total	**138**	**100**

Table 6: Mode of delivery.

Mode of delivery	No. of cases	Percentage (%)
1. Vaginal	116	84.06
a) Preterm	75	64.66
i. Preterm vertex	69	
ii. Preterm breech	6	
b) Full term	41	35.34
Full term vertex	39	
Full term breech	1	
Full term face	1	
2. LSCS	19	13.77
i. Term	5	
ii. Preterm	14	
3. VBAC:	2	1.45
i. Term	-	
ii. Preterm	2	
4. Laparotomy for rupture uterus	1	0.72

DISCUSSION

Stillbirth rate in our study is 27.76/1000 birth which is almost similar to the study by Nayak et al while it is less compared to the studies by Lucy et al, Vaishali et al, and Kumari et al.[18-21]

In our study, maximum number of stillbirth is seen in the birth weight between 1-1.5 kg which corresponds to the previous study by Nayak et al. One of the baby weighed 4.9 kg and was born to a diabetic mother. Since the majority of patients in our study were below 36 weeks of gestation, expectantly the birth weight was less than 2.5 kg in most of the cases. Underweight foetuses also included small for gestational age or growth restricted foetuses. Small for gestational age foetuses were seen in some cases of patients with severe pre-eclampsia. Foetuses with low birth weight other than being preterm and premature have decreased resistance to withstand hypoxic changes associated with labour. Since their reserve capacity to withstand stress is depleted, these foetuses cannot tolerate other medical or obstetrics complications.

In our study, most of the patients were in the age group of 21-30 years. This corresponds to the previous study carried out by Nayak et al. In our country, in the rural areas marriages are performed at an early age group and even a family of 3 children gets completed by the age of 25 years. However, in the urban area it is not the same and with the advent of infertility treatment modalities, it is expected that more and more number of elderly age group mothers will be seen. The adverse effect of advanced age with association of stillbirth may become obvious in the future. The relation between parity and incidence of IUFDs in primigravidas corresponds to the other studies. However, in our study high incidences of IUFDs were seen in grandmultiparas which is significant. These have not been mentioned in the earlier studies. Most of the grandmultiparas where associated with some of the other medical or obstetric risk factors. Intrapartum complications were seen more commonly in grandmultiparas.

In an ideal antenatal care, minimum of 3 antenatal care clinics should be attended by a pregnant women. But generally due to unawareness or general lack of understanding of the importance of antenatal visits, most patients usually do not complete the proper ANC visits. This problem is often seen in tertiary institute, where patients are usually referred at an advanced period of gestation to manage medical or obstetric complications which have developed.

The modes of delivery and the percentage of LSCS are same when compared to study by Kumari C et al whereas it is higher in study by Vaishali et al. The incidence of laprotomy was higher in study by Vaishali et al when compared to our study. Laprotomy was done in a case of uterine rupture. In our study, maximum number of patients delivered vaginally. Vaginal delivery is the aim unless there are specific indications for LSCS. The therapeutic options available are oxytocin induction or augmentation and prostaglandins given by various routes. Place of caesarean section in a case of IUFD is limited. The most common causes are placenta previa, previous caesarean section (two or more) and transverse lie.

The incidence of congenital anomalies varies among the studies from 2% to 10%. In our study, it constituted 2.17% of IUFDs which is almost similar to study by Kumari et al.[21] However, the incidence of congenital anomalies was found to be very high as compared to studies by Nayak et al and Kumari et al.[18,21] Chromosomal studies should be adviced to all patients who had previous history of delivering a malformed baby. Detailed post-mortem and placental histopathological examination can be adviced. But due to the emotional distress of loss of child or due to religious beliefs, parents and their family members refuse post-mortem examination of stillbirths. However, histopathological examination of placenta can be resorted to each and every case of stillbirth.

The incidence of PE and eclampsia as a cause of still birth is similar in our study when compared to almost all of the other studies. The incidence is less in the study of Vaishali et al.[20] Pre-eclampsia and eclmapsia are the preventable causes of IUFD. Pre-eclampsia and eclampsia results in foetal growth restriction, and chronic anoxia because of uteroplacental insufficiency. Increasing the awareness of the condition among the patients can help reduce the incidence. If these patients had received proper antenatal care in the right time, the babies could have been salvaged. Abruptio placenta is one of the major causes of still birth. When compared to other studies the incidence in our study is significantly lower, the incidence of abruption placenta is the same in the studies by Vaishali et al and Kumari et al.[20,21] Even though the

incidence of abruptio placenta is low, it still is the third most common cause of IUFD in our study. Majority of the patients with abruptio placenta in our study were referred cases, had they been diagnosed or referred earlier the babies could have been saved. 2 of the patients with abruption placenta had atonic PPH and so β-Lynch suture were taken. The incidence in our study is slightly lower when compared to study by Vaishali et al but higher than the study of Nayak et al.[18,20]

Gestational diabetes mellitus and transvere lie with hand prolapse as a cause of IUFD was seen in our study which was not seen in the previous studies. The incidence of rupture uterus is less when compared to study by Vaishali et al.[20] Sudden unexplained cause of IUFD still remains a major problem among the obstetricians and hence more studies need to be carried out in this area. Cord prolapse as a cause corresponds to Kumari et al while it is higher in Vaishali et al.[20,21] Cord related anomalies may be a cause of unexplained foetal death. The incidence of placenta previa as a cause of still birth in our study is almost similar when compared to other studies. All the cases of placenta previa in our study were unbooked cases and referred in emergency. Early ANC registration with regular antenatal check-ups and timely admission could have prevented these stillbirths. In our study, the incidence of obstructed labour is low when compared to the study by Lucy D et al.[19] Out of the 3 patients in our study, 2 were referred cases with severe foetal distress and there were intrapartum death of the foetuses. All the cases were delivered by LSCS.

CONCLUSION

Stillbirth is a heart-breaking experience for the family members especially the parents. Most of the stillbirths can be prevented with regular ANC visits and timely admission. Early detection of pre-eclampsia by regular ANCs and its treatment can reduce its complications including IUFD and abruptio placenta in few cases thereby further reducing the stillbirth rate. Death of the foetuses due to congenital anomalies and deaths due to cord accidents cannot be prevented totally. Causes like congenital anomalies require genetic counseling. All other factors can be prevented from causing IUFD by proper care during pregnancy and undertaking induction of labour at an optimum time. Early registration is an important pre-requisite for early detection of risk factors. Timely admission of the patients can reduce the stillbirth rate. Regular follow-up plays a major role in preventing foetal loss and recurrence. Education of the patient to avail obstetric care, more frequent visits for high risk pregnancies, timely reference to specialist will minimize foetal loss. Although, individual factors can cause foetal demise, it may be a multifactorial scenario in which a number of different factors act together to cause the death of the foetus. So, to unravel the complex pathways to foetal compromise, research should be continued on stillbirths and it may help prevent stillbirth in the future.

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