

Meconium Stained Amniotic Fluid With Maternal and Perinatal Outcome



Medical Science

KEYWORDS : Meconium stained liquor; Term gestation, Apgar score and perinatal outcome

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ABSTRACT

Introduction: Meconium stained amniotic fluid is associated with adverse outcome and is considered as a bad predictor of fetal outcome.

Objective: This study was undertaken to determine the correlation of amniotic fluid stained with meconium with maternal and fetal outcome

Methods: This prospective observational study was carried out in the Department of obstetrics and gynecology, Kanachur medical college, Derlakatte over a period of 1yr between January 1st 2015 to December 30th 2015. A total of 500 pregnant women who had completed more than 37weeks of gestation with singleton pregnancies and cephalic presentation were included in this study. Spontaneous or artificial rupture of membranes with meconium stained amniotic fluid were monitored during labour with fetal heart rate abnormality , 1 minute and 5 minute Apgar score , LSCS, vacuum delivery , male to female ratio, consistency of liquor, NICU admissions, neonatal complications as outcome variables

Results: The incidence of MSAF was 40% A total of 500 pregnant women who had completed more than 37 weeks of gestation, with singleton pregnancies and cephalic presentations, were included in this study. Women were divided into two groups: 200 women with MSAF, while 300 women with clear liquor were taken. Among 200 cases with meconium stained amniotic fluid (MSAF), 61% were unbooked and only 39 % were booked (at least 3 visits, with first visit in first trimester) .

38% women were of 20-30 years age-group The incidence of cesarean section (54% vs 12%), vacuum deliveries (61% vs 40%), fetal distress (79% vs. 45%), 1-minute Apgar score (37% vs. 5%), 5- minute Apgar (11% vs 3%),intrauterine fetal death(0% vs 0), birth asphyxia (25% vs 0.2%) NICU admission (59% vs 26%) .Incidence of Male to female was high (55% vs 44%).

Conclusions: MSAF at term gestation is a best predictor for adverse perinatal outcome and peripartum complications. Obstetric management should be affected by meconium in the amniotic fluid.

Introduction

The presence of amniotic fluid which is stained with meconium is important when considering Intrapartum management. meconium has been viewed as a harbinger of impending or ongoing compromise in the fetus. Many investigators observed that it is not associated with fetal hypoxia, acidosis, and fetal distress⁽⁵⁾. Thick meconium in amniotic fluid is a predisposing factor towards adverse perinatal outcome in the form of aspiration and its sequelae. The presence of meconium during labor and of meconium and delivery is seen in 16-20%, and this prevalence increases with gestational age⁽¹⁾. Meconium is the substance which have accumulated in the fetal bowel during intrauterine life. 69 % of newborns pass meconium by 12 hours of age but many infants pass meconium prior to birth as well⁽²⁾. Various studies have reported an incidence of meconium stained amniotic fluid ranging from 1.5 to 18 %⁽³⁾.

The clear etiology of meconium stained amniotic fluid (MSAF) however, is not known.

Acidosis, as consequence of asphyxia, has been suggested as a contributor to gastrointestinal motility and meconium passage by modulating the release of motilin and other gastrointestinal hormones^(4, 5). Few have found lower Apgar scores in meconium stained neonates⁽⁶⁾. Predictive value of meconium was better when it occurred in high risk patients and was thick, dark and tenacious. Lightly stained meconium had a poor correlation with fetal hypoxia⁽⁶⁾. The moderate and thick meconium group has a significantly greater risk of an abnormal FHR tracing, 1 and 5 minute Apgar score less than 7, a cord blood pH of less than 7.2, sepsis, need for Oxygen support and NICU admission of babies⁽⁵⁾. Aspiration of the meconium into fetal or neonatal lungs is associated with clinical disease ranging from mild respiratory distress to severe respiratory compromise and causes significant increase in perinatal morbidity and mortality⁽⁹⁾. Thus this study was undertaken with an objective - MECONIUM STAINED AMNIOTIC FLUID WITH MATERNAL & PERI NATAL OUTCOME.

2. METHODS AND MATERIALS

The present study was carried out in the department of Obstetrics and Gynecology of a tertiary care institute at Kanachur medical college, Derlakatte, prospectively over a period of 1 year between January 1st 2015 to december 30th 2015. An observational study was designed and two group of patients were identified according to presence and absence of meconium stain. 500 consecutive women who reported to the labour unit with single, intrauterine term live fetus with cephalic presentation, spontaneous onset of labour with 4 cm or more cervical dilatation and in whom there was presence of meconium in amniotic fluid on spontaneous rupture of membranes (SRM) or artificial rupture of membranes (ARM) were included in the study after proper consent. Term delivery was identified between 37th week to 40completed weeks .The labour was closely monitored and mode of delivery, Apgar scores at one and five minutes were recorded. neonate was followed in the immediate postpartum period and the outcome was noted. Exclusion criteria were: pregnancy less than 37weeks of gestation, high risk pregnancies or pregnancies with severe maternal diseases, pregnancy with any fetal malformations , maternal age more than 35yrs, antepartum death, intra uterine growth retardation, malposition's and presentations, placenta Previa, induction of labor, and maternal cardiac or any other diseases. Gestational age was determined by reliable recollection of the last menstrual period, by an ultrasonographic examination within 12 weeks of gestation. The data was analyzed.

RESULTS

During the study period there were 800 deliveries in our institution; 500 consecutive deliveries met the inclusion criteria and composed the study population. The incidence or prevalence of meconium was 40%.

In table 1 among 200 cases with meconium stained amniotic fluid (MSAF),61 % were unbooked patients and only 39% were booked (at least 3 visits, with first visit in first trimester) Incidence was increased to 38% women were of 20-30 years age-group compared to clear AF cases. Incidence was significantly decreased to 29% in women of >30yrs compared to clear AF.

PARAMETERS	CASES(MSAF 200)	CLEAR(300)
BOOKED	78(39%)	212(70%)
UNBOOKED	122(61%)	88(29%)
MATERNAL AGE	AGE	MSAF
	<20YRS	65(32%)
	20-30YRS	76(38%)
	>30YRS	59(29%)
		CLEAR AF
		(22%)
		137(68%)
		95(32%)

In Table 2 are presented the parity. There was significant increase in primigravida and birth weight between the two groups.

PARAMETERS	MSAF(200)	CLEAR(300)
PRIMIGRAVIDA	113(56%)	127(42%)
MULTIGRAVIDA	87(43%)	173(57%)
BIRTH WIEGHT		
<2KG	23(11%)	140(46%)
2.5-3KG	114(56%)	116(38%)
>3KG	63(31%)	44(15%)

Table 3 shows incidence of thick and thin meconium stained liquor

PARAMETERS	CASES	PERCENTAGE
THICK MECONIUM	82	41%
THIN MECONIUM	118	59%
LSCS in thick meconium	54	65%
LSCS in thin meconium	42	35%

Indication for LSCS due fetal heart abnormality is present in TABLE 4.

The prevalence of fetal distress, cesarean section and vacuum deliveries were significantly higher among women with MSAF compared with the clear amniotic fluid group.

Table 4:

PARAMETERS	MSAF(200)	CLEAR(300)
1MIN APGAR<3	75(37%)	15(5%)
5MIN APGAR<7	23(11%)	10(3%)
FETAL DISTRESS	158(79%)	135(45%)
INTRAPARTUM DEATH	0	0
NEONATAL DEATH	0	0
NORMAL VAGINAL DELIVERY	104(52%)	263(88%)
LSCS	96(54%)	37(12%)
VACCUM	123(61%)	120(40%)
BIRTH ASPHYXIA	5(25%)	5(0.2%)
NICU ADMISSION	178(89%)	78(26%)

Table 5 LSCS due to fetal distress.

Indication	No. of cases(96)	Percentage
Fetal bradycardia	23	24%
Fetal tachycardia	52	54%
Bradycardia with irregular heart rate	21	21%
Thick meconium	Fetal bradycardia	23(55%)
	Fetal tachycardia	19(46%)
Thin meconium	Fetal bradycardia	26(48%)
	Fetal tachycardia	28(50%)

Table 6 Incidence of male to female ratio

PARAMETERS	CASES	PERCENTAGE
MALE	111	55%
FEMALE	89	44%

4. Discussion

A total of 500 pregnant women who had completed more than 37 weeks of gestation, with singleton pregnancies and cephalic presentations, were included in this study. Women were divided into two groups: 200 women with MSAF, while 300 women with clear liquor were taken. Among 200cases with meconium stained amniotic fluid (MSAF), 61% were unbooked and only 31% were booked (at least 3 visits, with first visit in first trimester) .38% women were of 20-30 years age-group.

This study was done to find out fetal outcome of those deliveries with meconium stained liquor and to determine the risk of fetal outcome associated with it. In this study it was found that the rate of meconium staining in the amniotic fluid increased with maternal age and gestational age. Sunoo et al⁽¹¹⁾ found significant increased rate of meconium in amniotic fluid at term. Due to hormone motilin secreted in increasing quantities by the fetus as gestational age advances and most postdated gestations have meconium discharge because motilin levels are highest. Sedaghatian et al⁽²³⁾ and Sandu s s et al⁽¹¹⁾ observed similar result in their study.

Our study shows MSAF more common in primigravida (56%). Becker et al revealed that meconium more common in primigravidas.

Abnormal fetal heart rate were also found significantly high in cases which were similar with Berkus et al . researchers have reported an increased incidence of abnormal fetal heart rate patterns in MSAF. Patil⁽¹⁷⁾ found that 56% of MSAF had fetal heart rate abnormality. Wong⁽¹⁸⁾ found abnormal CTG in 9.7% of MSAF vs 5.7% of clear fluid group. Naveen⁽¹⁹⁾ identified clinical fetal distress in 27% of MSAF vs 8.5% of unexposed group.

Apgar scores have low predictive value of birth asphyxia and other factors affect it. Findings of Apgar scores might be relayed in the places where facilities of acid base assessment of the newborn were not available or WHO criteria for diagnosis of birth asphyxia. In our study 1 min Apgar <3 was about 37% significantly low and 5 min Apgar <7 was 11%. Oyelse at al⁽²⁴⁾ found significantly lower 5min Apgar scores.

Mode of delivery was influenced by the presence of MSAF. LSCS was high (54%) in MSAF. many obstetricians feel unsafe about the state of fetus when liquor is meconium stained during labour which has influenced lot on the mode of delivery. Places where there are facilities of Intrapartum monitoring like fetal blood sampling and CTG there is increased incidence of LSCS. Patil et al⁽¹⁷⁾ made similar observation. Wong (18) found that 13.3% of MSAF versus 8.8% of clear AF had LSCS. Patil reported a LSCS rate of 42% and Navi 49%. Sasikala⁽²⁷⁾et al have reported that MSAF alone is not an indication for LSCS but patients in labour needs strict supervision. Saunders et al(28) reported that LSCS performed twice frequently in MSAF due to lack of facilities like fetal scalp pH

Birth asphyxia was more in MSAF than .in clear AF. Gupta et al found that birth asphyxia was high in MSAF. Khatun found 12.9% birth asphyxia in her study. Requirement of

oropharyngeal suction was more in MSAF. Intubations were required. Meconium aspiration syndrome was developed (45.2%). Among them it was higher thick meconium.

Admission to NICU was more in MSAF(37%) and neonate mortality also was zero. Khatum found 2.9% mortality in MSAF with thick meconium stained and 1.4% mortality in control. Thin meconium infants are more likely to have passed meconium as physiologic maturation process and are more likely to be healthy at birth but still require NICU admission and monitoring.

Conclusion :

It is an enigma to the obstetrician and it is equally worrisome for the pediatrician. However, as shown in the study, moderate and thick meconium are associated with increased operative interventions, low Apgar score, increased risk of birth asphyxia, NICU admission. However, thin meconium is shown to have lesser perinatal complications thus identifying women at risk for passage of meconium in utero. Presence of MSAF requires intense fetal monitoring.

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