MECONIUM STAINED AMNIOTIC FLUID; A CONTINUOUS THREAT TO THE FETUS

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ABSTRACT

Objectives: To determine the effect of Meconium Stained Amniotic Fluid on mode of delivery and to evaluate feta outcome in terms of Apgar score, admission to NICU and neonatal deaths.

Materials and Methods: It was observational analytical study carried out in Gynae A unit of Khyber Teaching Hospita from 1st July to 31 st December 2016. 135 patients who met the inclusion criteria were included in the study as grou 1. Matched group of subjects was selected for comparison as group 2. Incidence of MSAF was 8%. Most of the patient In group 1 were unbooked(91.8%). Caesarean section was the commonest mode of delivery In group 1(more thar 50%). Apgar scores at 1 and 5 minutes were lower in the MSAF as compared to clear liquor. 35.5% babies in MSAF needed NICU admission as compared to 6.6% babies in clear liquor. Meconium Aspiration Syndrome was seen ir 9(6.6%) cases and 7 of them died in NICU.

Key Words: Meconium Stained Amniotic Fluid, Meconium Aspiration Syndrome, NICU.

INTRODUCTION

Aspiration of meconium by the fetus still remains a common cause of perinatal mortality and morbidity because it is difficult to prevent[1]. Meconium is passed in amniotic fluid in 12%-16% of the deliveries and in upto 5% of these pregnancies, meconium is aspirated leading to meconium aspiration syndrome[2]. Passage of meconium in amniotic fluid may be normal in certain circumstances like breech presentation and prolonged pregnancy. On the other hand it may be due to an acute or chronic hypoxic event which may pose a threat to the fetal life[3]. Placental insufficiency, maternal medical disorder (hypertension, cardiac disease, pre eclampsia, diabetes), oligohydramnios and maternal drug abuse (tobacco, cocaine) can cause meconium passage into amniotic fluid[4]. The risk of respiratory distress syndrome is 100 times more in fetuses born in meconium stained amniotic fluid as compared to those who are born with clear liquor. Perinatal mortality is increased 5 folds in meconium stained amniotic fluid as compared to clear liquor[5]. Meconium aspiration syndrome is a complication of meconium stained amniotic fluid and it is seen in around 20%-30% of all infants with meconium stained amniotic fluid[6]. It is defined as a respiratory distress that develops shortly after birth, with radiographic evidence of aspiration pneumonitis and presence of meconium stained amniotic fluid[7]. MAS causes mechanical, chemical and inflammatory reactions that cause airway obstructions, damage to lung tissue, inactivation of surfactants, chemical pneumonitis and decreased arterial oxygen pressure[8]. The incidence of MAS in MSAF is 5% and fetal death occurs in about 12% of fetuses with MAS[9]. In addition to the fetal death, other complications are also common in MSAF like neonatal asphyxia, chorioamnionitis, fetal distress and low APGAR score[10,11,12]. There is increased risk of admission to NICU due to these complications[10].

MSAF is seen commonly in laboring patients attending Khyber Teaching Hospital. Purpose of this study is to evaluate the effects of meconium stained liquor on mode of delivery and to find out neonatal morbidity and mortality in meconium stained amniotic fluid.

MATERIALS AND METHODS

This prospective observational analytical study was carried out in Department of Obstetrics and Gynaecology A Unit, Khyber Teaching Hospital, Peshawar from 1st July 2016 to 31st December 2016.

Inclusion criteria: All pregnant women with 37 completed weeks of gestation, with singleton pregnancy, cephalic presentation with meconium stained amniotic fluid. Matched group of subjects with clear amniotic fluid were selected for comparison.

Exclusion criteria: Pregnant patients with less than 37 completed weeks of gestation, breech presentation, still birth and patients with fetal congenital abnormalities were excluded from the study.

Sampling Technique: Purposive non probability technique

Patients were divided into two groups. Group 1 included patients having meconium stained liquor and Group 2 included patients having clear amniotic fluid. All the information (demographic and obstetrical) of both groups were noted in a systematic way on a predesigned proforma. Progress of labor was maintained

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by use of partogram in both groups. Strict fetal heart sounds record was maintained by use of intermittent auscultation. Patients in group 1 (with MSAF after spontaneous or artificial rupture of membranes) were followed by cardiotocography for 20 minutes. Mode of delivery was decided considering all obstetric factors. Patients who were undergoing trial of vaginal delivery, continuous electronic fetal monitoring was done in them. Fetal outcome was measured in terms of fetus being apparently healthy, Apgar score at 1 and 5 minutes, need for NICU admission, MAS and neonatal deaths (death within 7 days).

RESULTS

Total number of deliveries in the study period was 1722. Out of them 135 had MSAF (group 1). 135 matched subjects were selected for comparison in group 2. 11 (8.14%) patients in group 1 were booked and 124(91.8%) came in emergency. In group 2, booked patients were 28(20.7%) and emergency were 107(79.3%). In group 1 caesarean section was the commonest mode of delivery (78-57.7%) as compared to group 2 where only 28(20.7%) subjects underwent caesarean section. 48(35.5%) in group 1 had normal vaginal delivery while in group 2 103(76.2%) had normal vaginal delivery. More than half patients in group 1 (8 vs 3) had outlet forceps delivery. Vacuum delivery ra was equal in both groups. Details are outlined in Tab 2. It can be seen from the table that operative delive rate is quiet higher in group 1 in comparison to grou 2. 119(88%) babies were alive in group 1 compared t 128(94%). 16(11.8%) were dead in group 1 compare to only 3(2.22%) in group 2. Babies in group 1 ha low Apgar score of less than 7 at 1 and 5 minutes as compared to group 2. 48(35.5%) babies needed ICU admission in group 1 while only 9(6.6%) babies were sent to NICU in group 2. It shows that NICU referral is 5 times more in group 1 as compared to group 2. MAS was seen in 9(6.6%) cases and 7 of them died in NICU. Details are given in Table 3.

Table 1:

	Group 1: MSAF	Group 2: Clear Liquor
Booked	11(8%)	28(21%)
Emergency	124(92%)	107(79%)

Table 2:

Mode of delivery	Group 1: MSAF	Group 2: Clear Liquor
Normal vaginal delivery	48(58)	103(76)
Caesarean section	78(35)	28(21)
Outlet forceps delivery	8(6)	3(2)
Vacuum delivery	1(1)	1(1)

Table 3:

Condition of the new born	Group 1: MSAF	Group 2: Clear Liquor
Apgar score >7	38(28%)	96(72%)
Apgar score< 7 at 1 minute	97(72%)	39(28%)
Apgar score<7 at 5 minute	46(30%)	13(9%)
NICU Admission	48(35%)	9(6%)
MAS	9(6%)	—
Neonatal deaths	16(11.8%)	3(2%)

DISCUSSION

Khyber Teaching Hospital is a tertiary care hospital with three units A, B and C in gynae department. Total number of annual admission in each gynae unit is approximately 10,000 with a total delivery number of 3500 approximately. The hospital caters to a large population of Peshawar and adjacent rural areas.

MSAF is a commonly observed phenomenon. Total number of deliveries in the said period is 1722. MSAF is seen in 135 patients giving incidence of 8% comparable to the incidence reported by Maymon et al i.e 12-16%[2]. Other studies have reported incidence varying between 7-22% of live births[12,14]. Majority of patients (91.8%) with MSAF in our study were unbooked. Similar results are reported by Rajlaxmi Mundhra[15] where 72% patients were unbooked.

MSAF is a recognizable risk factor for adverse perinatal outcome. Such labours are intensively monitored and aggressively managed. The rate of operative delivery (caesarean section, forceps delivery and vacuum) is higher in MSAF as compared to clear liqour. In our study rate of caesarean section was more than double in group 1 as compared to group 2(57.7% vs 20.7%). Similar results are reported by Erum Sheikh[16] where caesarean section rate was 82% in MSAF and 18% in clear liquor. Saunders et al[17] also showed caesarean section rate twice as common in MSAF as compared to clear liquor. Higher caesarean section rates in our study can be due to the fact that we do not have the facility of the fetal scalp ph measurements. In contrast to our study Wong SF[18] showed caesarean section rate of 13.2% in MSAF as compared to 8.8% in clear liquor. This lower rate of caesarean section in their study could be due to incorporation of scalp ph sampling in their study.

Apgar score of less than 7 at 1 and 5 minutes were more commonly observed in group 1 as compared to group 2. Similarly patil et al[19] reported that 19% babies with MSAF had unsatisfactory Apgar score. Low Apgar score requires immediate resuscitation of the newborn. Failure of the Apgar to improve after 5 minutes requires advanced life support and ICU care of the new born.

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Admission to NICU in our study was 48(35.5%) in group 1 as compared to group 2 where only 9(6.6%) neonates were sent to NICU. Scott et al (20) also reported higher rate of NICU admission. Neonatal deaths were 16(11.8%) in MSAF compared to only 3(2.2%) in clear liquor. It can be seen that there is 5 fold increase of neonatal death in MSAF as compared to clear liquor. Raj Laxmi Mandhra reported 3.03% neonatal deaths. Similarly Ziadeh SM[21] found that perinatal mortality in births with clear fluid was 2/1000 live births and increased to 10/1000 live births in presence of MSAF, clearly demonstrating an increase need to closely monitor deliveries complicated by MSAF.

CONCLUSIONS

Based on study results, it is concluded that meconium staining of amniotic fluid is a real threat to the fetus. It increases the risk of fetal distress, birth asphyxia, low Apgar score, NICU admission and neonatal deaths. Pregnancies with MSAF should be vigilantly monitored and paediatrician should be present at the time of delivery for active resuscitation of the new born.

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