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ORIGINAL RESEARCH

Study of maternal factors and perinatal outcome in meconium stained liquor in a tertiary care hospital

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ABSTRACT

Background: The presence of meconium-stained amniotic fluid (MSAF) is believed to be one of the surest signs of fetal distress in utero due to fetal hypoxia. The objective of the study is to determine the maternal factors and perinatal outcome in meconium stained liquor in a tertiary care hospital.

Materials and method: A prospective, observational and analytical study was conducted among 500 women in the Department of Obstetrics and Gynecology, SMGS Hospital, GMC Jammu from July 2023 to December 2023. Women with singleton pregnancy, cephalic presentation admitted in labour room and MSAF was detected after spontaneous or artificial rupture of membranes were taken into study. Women having multiple pregnancy, non-cephalic presentation, fetal congenital malformation, intrauterine fetal death were excluded from study.

Results: A total of 10,453 deliveries occurred during the study duration, meconium stained liquor was seen in 1150 patients. This shows a prevalence of 11%. After considering the inclusion and exclusion criteria, a total of 500 cases of MSAF were taken. These were compared with 500 randomly selected control group with clear liquor. Majority of the patients in MSAF group were in the age group 26-30 years accounting for 45%.

Conclusion: Incidence of meconium stained liquor varies greatly with maternal risk factors. Cases of postdatism, IUGR, IHCP should be dealt with efficient and continuous monitoring of fetal wellbeing during labor and timely managing them in case any meconium stained liquor appears in them. Since meconium stained liquor has multiple adverse effects in the perinatal period , so timely management is important to improve fetal outcome. Early detection of high risk maternal factors and careful watch during labor for meconium in early stage can help avoid adverse perinatal outcome by prompt and early obstetrical intervention and effective postnatal care.

Keywords: maternal factors, obstetrics, perinatal outcome, meconium.

INTRODUCTION

Meconium is the first substance secreted from fetal intestines, consisting of intestinal epithelial cells, lanugo, mucus, amniotic fluid, bile and water. Meconium stained amniotic fluid (MSAF) occurs in approximately 15 to 20% of term pregnancies. The incidence of MSAF increases with gestational age and is approximately 23-52% after 42 weeks of gestation[1]. The various hypothesis for the triggering event for in-utero passage of meconium include fetal hypoxia, vagal stimulation leading to increased peristalsis and relaxation of anal sphincter and passage of the meconium as a consequence of normal gastrointestinal tract maturation as the gestational age advances[2].Fetal hypoxia leading to increased peristalsis and passage of meconium appears to be plausible as there is increased incidence of passage of meconium in many cases where fetal distress is diagnosed on the basis of fetal bradycardia or abnormal doppler parameters[3]. On the contrary no definite cause is found in many cases where there is meconium staining of amniotic fluid, first noted during rupture of membranes. Though meconium aspiration can occur in any gestation whether complicated or uncomplicated, treating obstetrician must be aware of presence of maternal risk factors so that appropriate preventive and therapeutic measures can be taken in time[4]. Meconium stained liquor has multiple adverse perinatal effects. In all such cases appropriate measures must be taken to prevent fetal morbidity and mortality[5].

This study was conducted to find out the prevalence of meconium stained liquor during labor, study of

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maternal risk factors and the perinatal outcome in meconium stained amniotic fluid.

AIMS & OBJECTIVES

1. To study the prevalence of meconium stained liquor during labor
2. Maternal risk factors associated with MSAF
3. Perinatal outcome observed in MSAF

MATERIAL & METHODS

Study design – It was a prospective, observational and analytical study, conducted in the Department of Obstetrics and Gynecology, SMGS Hospital, GMC Jammu. Duration of the study was 6 months, from July 2023 to December 2023.

Inclusion criteria: Women with singleton pregnancy, cephalic presentation admitted in labour room and MSAF was detected after spontaneous or artificial rupture of membranes. Pregnant women with MSAF taken as cases, whereas those with clear liquor taken as control group.

Exclusion criteria: Multiple pregnancy, non-cephalic presentation, fetal congenital malformation, intrauterine fetal death.

Sample size: A total of 500 women with MSAF were taken as cases. These were compared with 500 randomly selected controls.

RESULTS

This study was done to find out the fetal outcome of those deliveries where liquor was meconium stained and to determine the maternal risk factors associated with meconium stained liquor. A total of 10,453 deliveries occurred during the study duration, meconium stained liquor was seen in 1150 patients. This shows a prevalence of 11%.

After considering the inclusion and exclusion criteria, a total of 500 cases of MSAF were taken. These were compared with 500 randomly selected control group with clear liquor.

Majority of the patients in MSAF group were in the age group 26-30 years accounting for 45%.

Majority of the patients being primigravida (62%). Similar results were reported by the authors such as Harikumar et al[6] who reported that 69% of the women found to have meconium stained amniotic fluid were primigravida.

PARAMETERS	CASES (n = 500) (%)	CONTROLS (n=500) (%)
MATERNAL AGE(YEARS)		
<20	37 (7.5%)	40 (8%)
20-25	188 (37.5%)	195 (39%)
26-30	**225 (45%)**	**210 (42%)**
>30	50 (10%)	55 (11%)
PARITY		
Primigravida	**310 (62%)**	**285 (57 %)**
Multigravida	190 (32%)	215 (43%)

The most common gestation age which was associated with MSAF was above 40 weeks of gestation. Similarly, Sori DA et al [7] found that the meconium stained amniotic fluid was more common in between the gestational age of 40-42 weeks.

PARAMETERS	CASES (n = 500) (%)	CONTROLS (n=500) (%)
GESTATIONAL AGE (WEEKS)		
<37	75 (15%)	60 (12%)
37-40	150 (30%)	**305 (61%)**
>40-42	**220 (44%)**	120 (24 %)
>42	55 (11%)	15 (3%)

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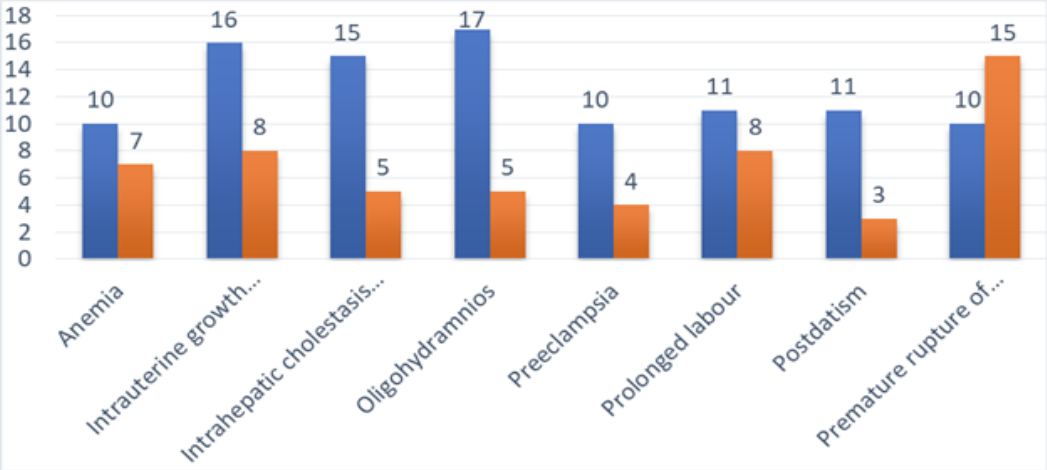
ANTEPARTUM COMPLICATIONS

The patients with meconium stained liquor were having maternal risk factors , more common among oligohydramnios (17%), IUGR (16%), IHCP (15%) and postdatism.



The mode of delivery was significantly affected by the presence of meconium, 60% patients underwent LSCS

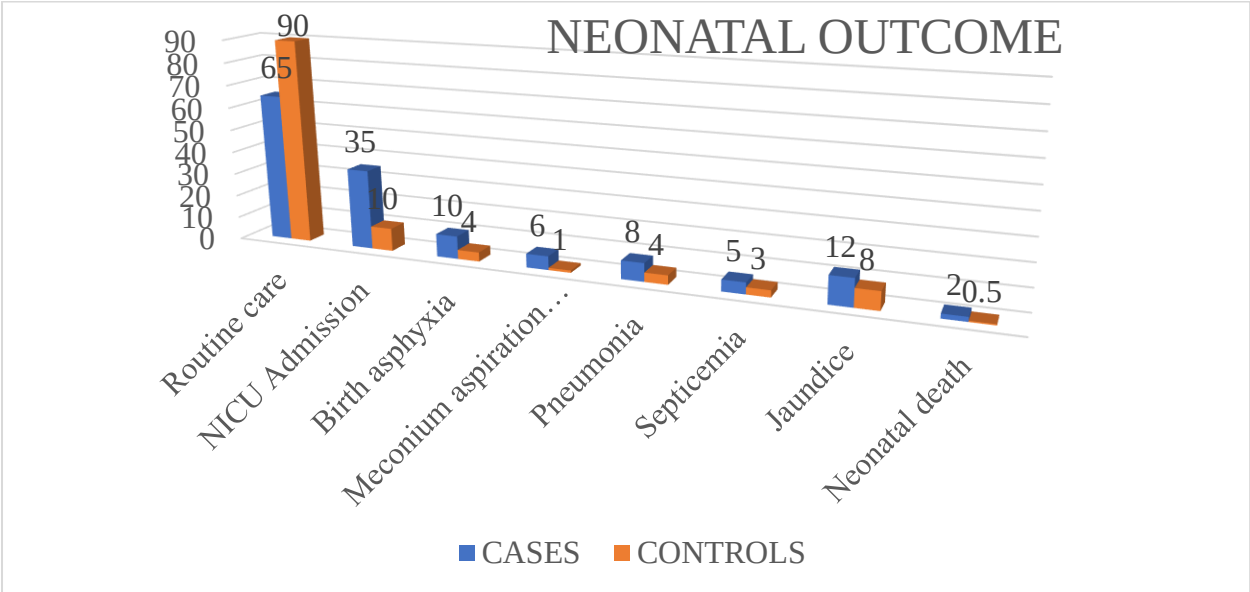
In the patients with clear liquor, majority had spontaneous vaginal delivery (66%), only 30% underwent LSCS

PERINATAL OUTCOME

The patients with meconium stained liquor had adverse perinatal outcome as compared to patients with clear liquor Patients with meconium liquor had more NICU admission (35% in meconium group and 10 % in clear liquor group)

Also meconium stained liquor had more cases of birth asphyxia (10%) Neonatal mortality was seen in 2 % of meconium stained liquor patients as compared to 0.2 % in clear liquor group. Debdas et al[8] have reported similar perinatal mortality rate (3%) while Narang et al[9] have found a slightly higher perinatal mortality in neonates born through meconium stained amniotic fluid (7.7%).

ONSET OF LABOUR Spontaneous labour Induction of labour	225 (45 %) **275 (55%)**	**260 (52%)** 240 (48%)
MODE OF DELIVERY LSCS Spontaneous vaginal delivery Instrumental vaginal delivery	 **300 (60%)** 175(35%) 25 (5%)	 150 (30%) **330 (66%)** 20 (4%)



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CONCLUSION

Incidence of meconium stained liquor varies greatly with maternal risk factors. Cases of postdatism, IUGR, IHCP should be dealt with efficient and continuous monitoring of fetal wellbeing during labor and timely managing them in case any meconium stained liquor appears in them. Since meconium stained liquor has multiple adverse effects in the perinatal period , so timely management is important to improve fetal outcome. Early detection of high risk maternal factors and careful watch during labor for meconium in early stage can help avoid adverse perinatal outcome by prompt and early obstetrical intervention and effective postnatal care.

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