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Original Research Paper

Neonatology

STUDY THE FREQUENCY AND RISK FACTORS OF MECONIUM ASPIRATION SYNDROME IN NEWBORN

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ABSTRACT

Background: Meconium is the first faeces of a newborn. The incidence of meconium stained liquor is 10-15% of deliveries; out of which 5% develop meconium syndrome. It is regarded as a sign of fetal compromise. **Objectives:** To study the frequency and risk factors of Meconium Aspiration Syndrome in newborn **Method:** It is a hospital based, prospective, cohort study comprising of neonates. Setting Neonatal intensive care unit (NICU) of the Department of Paediatrics and Post Natal ward. **Sample size** - 4pq/e2 = 81. **Inclusion criteria:** In born neonates born to mothers with meconium stained amniotic fluid. Out born neonates who present in the NICU within one hour of birth with history of MSAF along with staining of skin, nails and umbilical cord. **Results:** There were 847 deliveries during the study period. Frequency of babies born with meconium stained amniotic fluid (MSAF) was 9.6%. The frequency of meconium aspiration syndrome (MAS) out of total MSAF deliveries was (7.4%). **Conclusion:** Meconium aspiration syndrome is one of the most common problems in the newborn and contributes significantly to the neonatal morbidity and mortality.MAS was significantly associated with maternal risk factors like preeclampsia, oligohydroamnios and birth factors like prolonged duration of labour, low Apgar score of 1 and 5 min.

KEYWORDS :

INTRODUCTION

Meconium is the first faeces of a new born composed of water, residue of bile, desquamated skin, hairs and intestinal cells, which is greenish thick and viscous formed during the third intrauterine week.[1] The overall frequency of MSAF varies between 10-15% at birth and it usually occurs in term or post term infant.[2] MAS occur in about 5% of infants born through MSAF.[3] Risk factors that promote the passage of meconium in-utero includes antenatal risk factors like :- prolonged gestation, antepartum haemorrhage, placental insufficiency, preeclampsia, oligohydroamnios, maternal disease like diabetes mellitus, pregnancy induced hypertension, anaemia, toxaemia, maternal drug abuse, premature rupture of membranes while fetal risk factors include fetal hypoxia and R-h incompatibility.[4]

AIM AND OBJECTIVES

AIM -

To study the frequency and risk factors of Meconium Aspiration Syndrome in newborn.

OBJECTIVES:

To study the frequency of babies born with Meconium Stained Amniotic Fluid (MSAF). To study risk factors for development of Meconium Aspiration Syndrome (MAS). To study the frequency of Meconium Aspiration Syndrome in neonates delivered by Meconium Stained Amniotic Fluid.

MATERIALS AND METHODS-

It is a hospital based, prospective, cohort study comprising of neonates.

Sample Size -

4pq/e2 = 81 p= prevalence (5%)2 q = 100 – p e = absolute error (5%)

Inclusion Criteria:

1. In born neonates born to mothers with meconium stained amniotic fluid.
2. Out born neonates who present in the NICU within one hour of birth with history of MSAF along with staining of skin, nails and umbilical cord.

Exclusion Criteria:

All babies who do not have history of MSAF but have feature of Respiratory distress suggestive of other diagnosis. Babies presenting after one hour of post natal life, new born with congenital malformations.

Diagnosis of MAS

Meconium aspiration syndrome (MAS) will be defined as per following criteria [6]

Presence Of

1. Meconium stained amniotic fluid or history of (H/O) MSAF in babies.
2. Respiratory distress as per the Respiratory distress severity (RDS) scoring system (Downe's scoring system) Abnormality of chest roentgenogram.

In all selected new born babies detailed antenatal, natal and maternal history will be taken followed by detailed clinical examination with emphasis on respiratory system.

Following investigation will be done in all cases of MSAF who develop respiratory distress soon after birth -Complete blood count (CBC), Chest x- ray – within one hour and later if required. Sepsis screen – (I/T ratio, CRP, blood culture) Arterial blood gas analysis.

RESULT & OBSERAVATIONS

The study was conducted in the Department of Paediatrics, Shri Ram Murti Smarak Institue of Medical Sciences, Bareilly from December 2015 to October 2016. It was a prospective, cohort study done on eighty one new-borns delivered by mother having meconium stained amniotic fluid.

It was observed that 847 deliveries took place in the hospital during the above mentioned period, 81 (9.6 %) new-borns had meconium stained amniotic fluid and six (7.4%) babies developed meconium aspiration syndrome.

Table 1: Distribution of newborns with meconium stained amniotic fluid amongst

Those born in the hospital during study period

Newborn babies	n	%
Total number of babies born during the study period	847	100.0
Babies born with meconium stained amniotic fluid	81	9.6

Table 2: Profile of MAS in newborn babies

Total babies	n(81)	n%
Babies developed meconium aspiration syndrome	6	7.4

Table no 3 - Correlation of MAS with maternal factors

Maternal factors		DIAG				Total		P-value*
		MSAF		MAS				
		n(75)	%	n(6)	%	n(81)	%	
Maternal Hb	< 11.0	37	49.3	5	11.9	42	51.9	0.2029
	≥ 11.0	38	50.7	1	2.5	39	48.1	
Preeclampsia	Yes	2	2.7	2	50	4	4.9	0.0259
	N0	73	97.3	4	5.1	77	95.1	
oligohydroamnios	Yes	3	4.0	2	40	5	6.2	0.0417
	No	72	96.0	4	5.2	76	92.6	
RH incompatibility	Yes	6	8.0	1	14.2	7	8.6	0.4292
	No	69	92.0	5	6.7	74	91.4	
IUGR babies	AGA	73	97.3	5	6.4	78	96.3	0.2086
	SGA	2	2.7	1	33.3	3	3.7	

Development of meconium aspiration syndrome in babies born with MSAF has significant bearing to pre-eclampsia and oligohydramnios and none to anemia, Rh-incompatibility or growth retardation in-utro.

DISCUSSION

There were 847 deliveries during the study period. Frequency of babies born with meconium stained amniotic fluid (MSAF) was 9.6%. However according to literature review the overall frequency of MSAF varies between 8-22%.[1] A Similar result of 9.8% was found by Goud and Krishna.[7] The frequency of meconium aspiration syndrome (MAS) out of total MSAF deliveries was (7.4%) in the present study. On literature review it was found that incidence of MAS is 5% of all neonates born through MSAF.[2] While Nirmala et al (7.8%) and kanyashree et al (9.6%) observed the similar incidence.[8] On evaluation of the association between MAS and maternal factors, it was observed that 81 mothers who gave birth along with MSAF, 42 (51.9%) were anaemic, four (4.5%) had pre-eclampsia, five (6.2%) had oligohydramnios, seven had (8.6%) Rh incapability. Study by Gupta et al pregnancy induced hypertension (PIH) association was (15.4%) with MAS.[9] Study done by Bhatia et al found MAS was significantly associated with post-dated pregnancy, preeclampsia, PROM and Rh isoimmunisation.[10]

CONCLUSION

Meconium aspiration syndrome is one of the common problems in the newborn and contributes significantly to the neonatal morbidity and mortality. Frequency of babies born with MSAF was 9.6% out of total live births during study period. The frequency of MAS out of total MSAF deliveries was 7.4%. MAS was significantly associated with maternal risk factors like preeclampsia, oligohydroamnios and birth factors like prolonged duration of labour, low Apgar score of 1 and 5 min.

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