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Outcome Of Meconium Aspiration Syndrome-An Observational Study

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Abstract

Background- Respiratory distress of newborn through meconium-stained amniotic fluid(MSAF) whose symptoms can't be explained otherwise is usually diagnosed as meconium aspiration syndrome(MAS).Occurs in 10-15% of total live births.MAS is the leading cause of NICU admission in term neonates.

Objectives-

To study the outcome of MAS in a tertiary care hospital.
To assess the correlation between the perinatal risk factors & outcome.

Materials & Methods

It is an observational study conducted in NICU & POSTNATAL
WARD of HI-TECH medical college, Bhubaneswar from 1stMay2022 to 31stOct2022.
Babies >34 weeks gestation with MSAF those satisfying diagnostic criteria of MAS were included.
Newborns with congenital anomalies & preterm<34weeks are excluded. Gestational age,mode of delivery,Downe's score & SilvermanAnderson Score at birth & thickness of meconium are taken as risk factors. Basing on requirement of oxygen,continuous positive airway pressure,ventilatory support & surfactant severity was graded.NICU Stay period was taken into account.Chest x-ray finding with sepsis screening were documented.

Results

Out of total 604 deliveries, 128 are with meconium stained amniotic fluid including 7 outborns.52(39%) were diagnosed as MAS. Male,Female ratio is 2:1.81%(41cases) presented with DOWNE's or SAS score >3 at birth or during admission. Oxygen via nasal prong,CPAP & Ventilator are required in 17%,56%,27% cases respectively. Surfactant is given in 10%(5).
Mortality is 14%.78%(40) presented abnormal radiological finding .35%(18) were presented with sepsis.

Conclusion

Outcome of MAS depends upon the intrapartum risks & immediate postpartum intervention. Surfactant can help preventing worse outcome.Death in severe MAS baby occurs within 24hr with all supportive measures.

Keywords: Meconium aspiration syndrome,Downe's score,SAS score,Perinatal risk factor,Surfactant

Introduction

Respiratory distress of newborn through meconium-stained amniotic fluid(MSAF) whose symptoms can't be explained otherwise is usually diagnosed as meconium aspiration syndrome(MAS). [2,3]

Occurs in 10-15% of total births. [1]

MAS is the leading cause of NICU admission in term and postterm infants.

Meconium aspiration syndrome(MAS) develops in5% of such infants,30% require mechanical ventilation and 3-5% die.[1]

Many perinatal risk factors have been associated with meconium aspiration including placental insufficiency, maternal hypertension, oligohydramnions etc. [2]

Aim Of The Study-

To study the outcome of MAS in a tertiary care hospital.

To assess the correlation between the perinatal risk factors & outcome.

Materials & Methods-

It is an observational study conducted in NICU & POSTNATAL WARD of HI-TECH medical college, Bhubaneswar from 1stMay2022 to 31stOct2022.

Inclusion Criteria-

Babies >34 weeks gestation with MSAF those satisfying diagnostic criteria of MAS .[2,3,4]

Total of 128 MSAF 52 diagnosed case of MAS.

Gestational age,mode of delivery,Downe's score & SilvermanAnderson Score at birth & thickness of meconium are taken as risk factors.

Exclusion Criteria-

Newborns with congenital anomalies & preterm<34weeks are excluded.

Basing on requirement of oxygen,continuous positive airway pressure,ventilatory support & surfactant severity was graded.NICU Stay period was taken into account.Chest x-ray finding with sepsis screening were documented.

Data Collection Tools - The clinical data collected in a predesigned format.

Statistical Analysis - The data were analysed using SPSS software version 2.0

Observations:

Bar 1. Distribution Of Total Number Of Deliveries

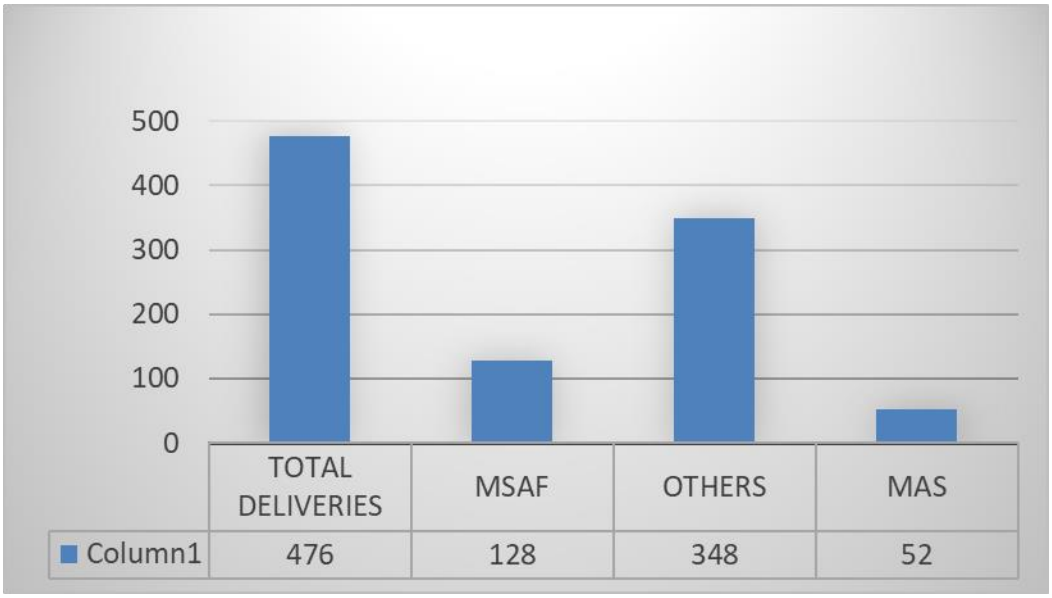


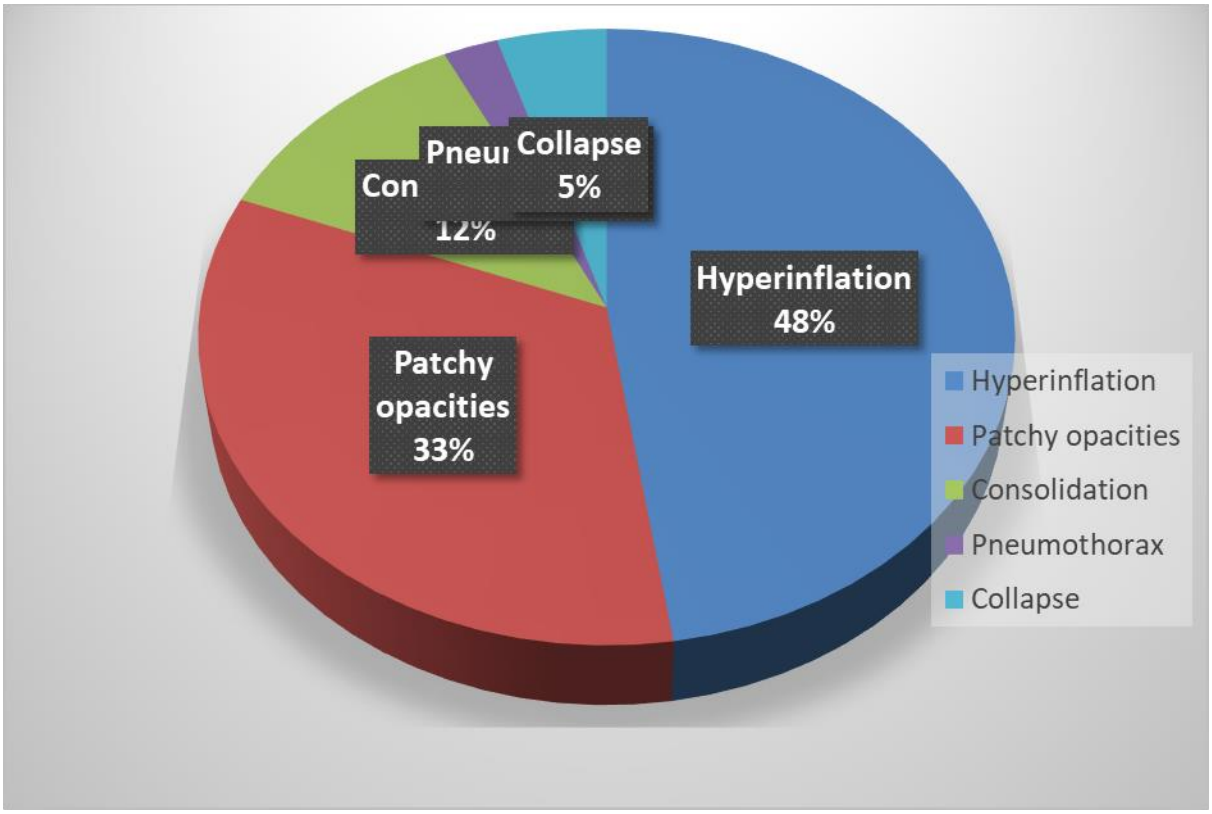
Table 1-Sex Distribution As Per Thickness Of Msl Showing Male Preponderance

Features	Thick MSAF n(%)	Thin MSAF n(%)	
Total MAS n=52	35(67.3)	17(32.7)	
MALE(total-34)	20(58.8)	14(41.1)	P value-0.03 significant

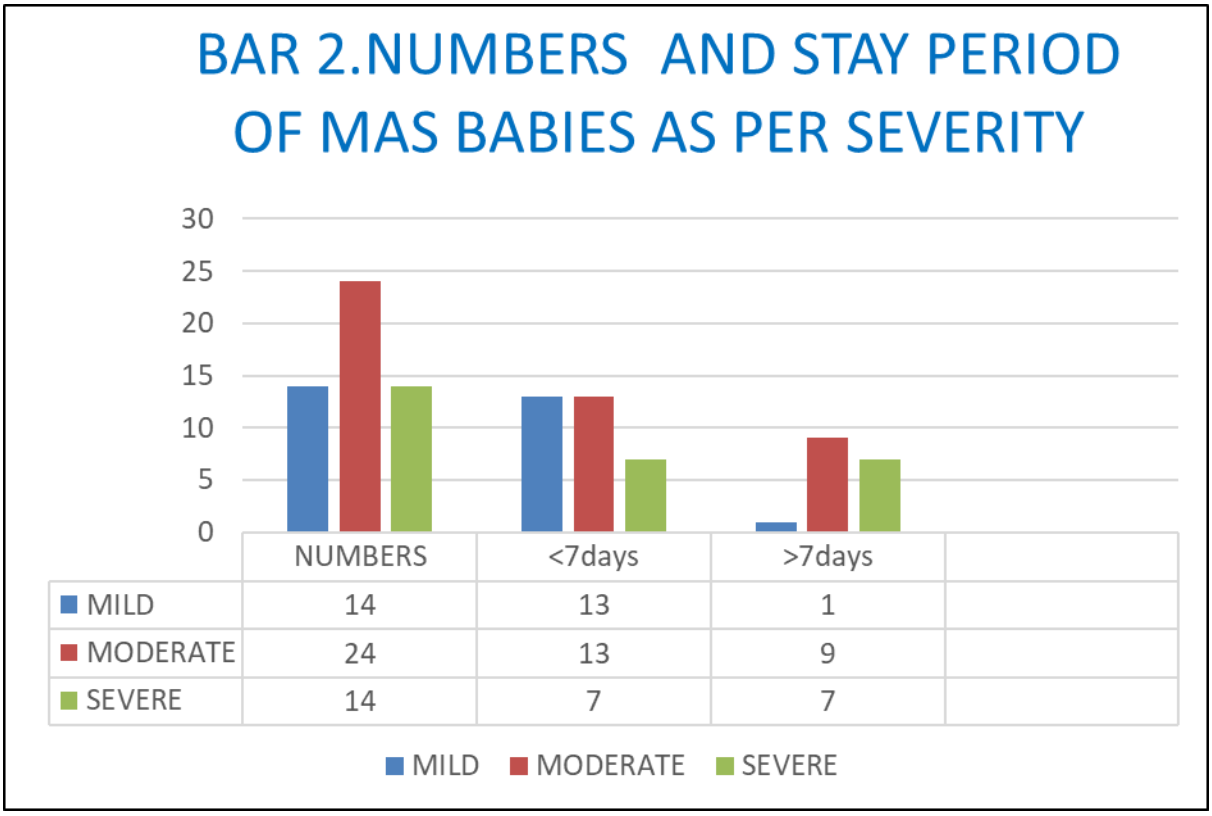
Volume 7, Issue 3; May-June 2024; Page No 469-477

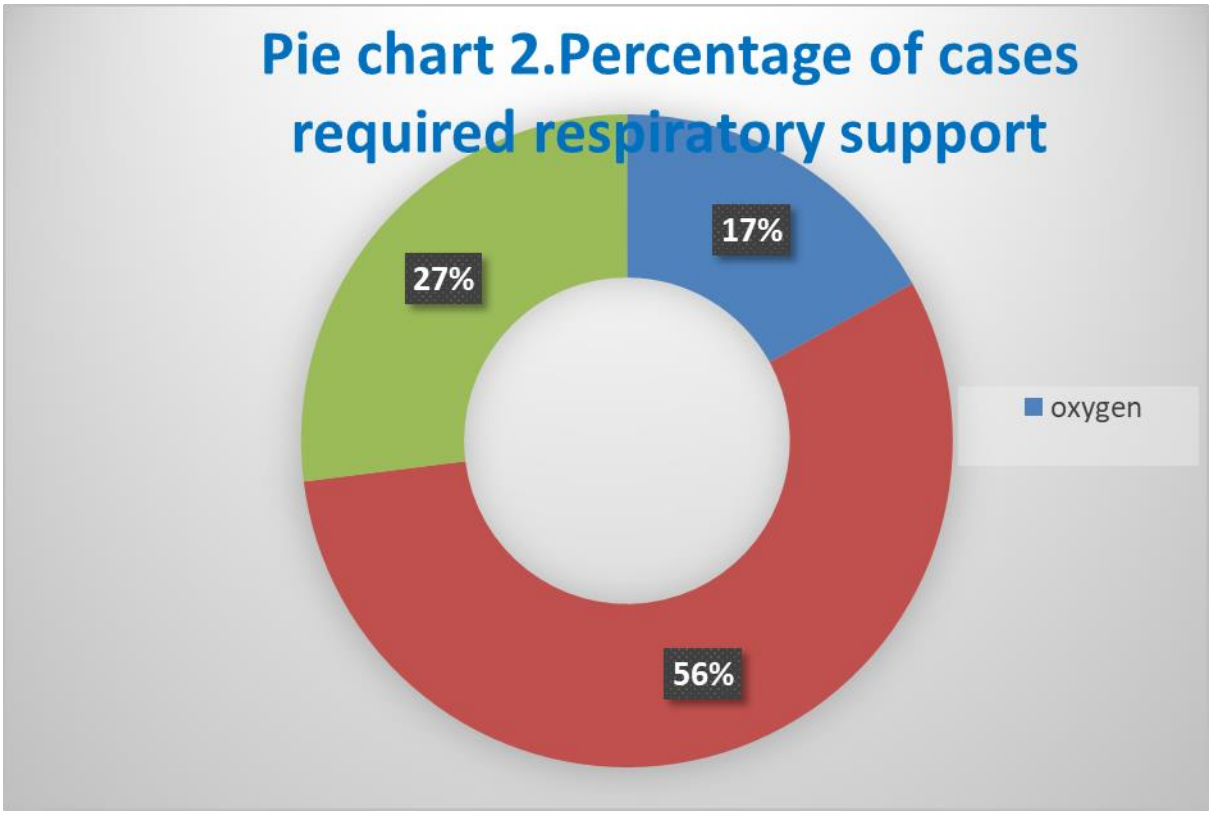
FEMALE(total-18)	15(83.3)	3(16.6)

Radiological Findings:



Volume 7, Issue 3; May-June 2024; Page No 469-477





Volume 7, Issue 3; May-June 2024; Page No 469-477

Table 2: Showing Role Of Surfactant

OUTCOME AFTER GIVING SURFACTANT(N=7)	CASES
SURFACTANT USED IN <24HRS	28%(2)
SURFACTANT USED IN >24HRS	71%(5)
IMPROVED	71%(5)
2ND DOSE OF SURFACTANT REQUIREMENT	42%(3)
DIED	28%(2)

Results-

Out of 52 cases prolonged O2 requirement in 2cases.

PPHN was developed in 5cases,among which 1 died.

Deaths occured in 7cases.

Among the severe MAS cases requiring fio2 more than 60 % and higher pressure requirement Surfactant was given .

From the 14 severe MAS cases 7 were given surfactant but 2 of them died ,5 survived among the non surfactant cases 3 died . Which signifies surfactant plays a role in good outcome of MAS patients.

Drawback-

As number of severe MAS cases are less it may require a long term study period which we are continuing

Table-3a Clinical Variables(Perinatal Risk Factors)In Mild, Moderate , Severe Mas And Non Mas Groups

VARIABLES	MSL but NO MAS N-75	MILD/ MODERATE MAS n-38	P-VALUE	SEVERE MAS n-14	P-VALUE
PARITY	79	90	0.034	88.9	0.693

Volume 7, Issue 3; May-June 2024; Page No 469-477

			SIGNIFICANT		
INTRAPARTUM FEVER	22.5	50	<.001 SIGNIFICANT	44.4	0.126
OLIGO	6.8	8.1	0.709	0	.083
Normal delivery	27.8	30.8	0.575	33.3	
Caeserean	72.2	69.2		66.7	<0.05 SIGNIFICANT
Gestational age <37weeks	12	1.9	0.333	5.7	
Gestational age >37weeks	84	98.1	<0.001 SIGNIFICANT	94.3	1.04
FHR monitoring Tachycardia	22.4	41.9	0.001 SIGNIFICANT	44.4	.124
Bradycardia	0.2	0.0	1	11.1	0.03 SIGNIFICANT
Minimal variability	37.8	53.2	0.045	44.4	0.05 SIGNIFICANT

Table-3b Clinical Variables In Mild,Moderate ,Severe Mas And Non Mas Groups

VARIABLE	MSL	MILD/MODERATE MAS	P-VALUE	SEVERE MAS	P-VALUE
APGAR SCORE 1min <4	1.3	40.3	,<0.001 SIGNIFICANT	44.4	<0.001 SIGNIFICANT

Volume 7, Issue 3; May-June 2024; Page No 469-477

APGAR SCORE 5 min<7	0.3	17.7	<0.001 SIGNIFICANT	33.3	<0.001 SIGNIFICANT
CORD PH	7.268+/-0.003	7.165+/-0.167	<0.001 SIGNIFICANT	7.22+/-0.041	0.353
SAS/DOWNES SCORE < 4	4	1		4	
DOWNE'S/SAS SCORE >4	16	18		9	<0.05 significant
NICU ADMISSION	2.2	88.7	**<0.001** SIGNIFICANT	100	<0.001 SIGNIFICANT
NICU STAY TIME	3+/-.77	6=/-0.30	0.556	9.0+/-2.24	0.003 SIGNIFICANT

Results- There were significant association of cord pH ,APGAR SCORE with MAS.

DOWNE'S SCORE >4 showing significance.All of these were directly related with NICU stay period & outcome of MAS.

Discussion-

Meconium aspiration syndrome (MAS) is an important cause of neonatal mortality and morbidity in NICUs.The proportion of newborns admitted in NICUS was 10.3% of total deliveries in our study.[1,5]

Sex ratio is 1.8:1 with male preponderance.[1,2,4]

Higher rates of LSCS in comparison to normal delivery in MAS babies in our study showing poor obstretic outcome with a significant P value.

Mean gestational age was 39.5 weeks which signifies MAS is more common in term and post term cases,with the exception of 4cases in our study. [1,2,3,5]

It is noted that most of the severe MAS cases in our study showed minimal variability and required emergency cesarean sections within a few hours of admission.[3]

By using SURFACTANT t he primary outcome was days on mechanical ventilation was decreased as compared to non surfactant cases.

Secondary outcomes included days requiring oxygen therapy with a target arterial oxygen saturation of more than 90%, persistent pulmonary hypertension (PPHN), OI after 2hrs of first dose and mortality before discharge.[6]

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Volume 7, Issue 3; May-June 2024; Page No 469-477

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Volume 7, Issue 3; May-June 2024; Page No 469-477