

ORIGINAL RESEARCH

Assessment of clinical spectrum of immediate outcome of neonate born through meconium- stained amniotic fluid

Irshad Ahmad Bhat¹, Nisar Ahmad Bhat², Nisar Ahmad³, Qazi Iqbal⁴

^{1,2,3} Postgraduate students, Department of Pediatrics SKIMS Soura, Srinagar, Jammu and Kashmir

⁴ Associate Professor, Department of Pediatrics SKIMS Soura, Srinagar, Jammu and Kashmir

Corresponding author

Dr. Nisar Ahmad, Postgraduate student, Department of Pediatrics SKIMS Soura, Srinagar, Jammu and Kashmir

ABSTRACT

Background: The detection of meconium-stained amniotic fluid during labour often causes anxiety in the delivery room because of its association with increased perinatal mortality and morbidity. The present study was conducted to assess clinical spectrum of immediate outcome of neonate born through meconium- stained amniotic fluid.

Materials & Methods: 65 newborns who had meconium staining of the amniotic fluid of both genders were recruited. Parameters such as grading of meconium done either as thin or thick meconium and type of baby noted as either vigorous or non- vigorous baby etc. was noted.

Results: Out of 65 patients, 30 were males and 35 were females. Meconium was thin in 45 and thick in 20 patients. Out the the 65 sample, 42 patients were vigorous and 23 were non vigorous. Regarding mother's age, 15,18 and 32 were in the age group of less than 20, 20-35, greater than 35 years of age respectively. Out of 65 patients, perinatal asphyxia was seen in 32 patients. Antenatal risks were PIH in 11, anemia in 9, no risk factor was found in in 20 and GDM in 14 cases. 6 patients needed only Bag & Mask ventilation whereas 6 patients needed Endotracheal intubation.

Conclusion: Maximum babies had thin type of meconium. Perinatal asphyxia was seen in maximum babies.

Key words: amniotic fluid, meconium-stained, resuscitation

INTRODUCTION

The detection of meconium-stained amniotic fluid during labour often causes anxiety in the delivery room because of its association with increased perinatal mortality and morbidity. However, experts continue to debate whether the risk of harm is associated with the meconium itself, or whether the overall risk is increased because of the underlying condition leading to the passage of meconium.¹ The obstetric literature is fraught with controversy and unanswered questions regarding the significance of meconium in the amniotic fluid and the appropriate management protocols that should be followed when it is discovered. It is believed by some medical experts that the passage of meconium is triggered by fetal stress, such as hypoxia or asphyxia, and that the presence of meconium in the fluid may be considered an indicator of fetal distress.²

Meconium is derived from the Greek word "mekoni," meaning poppy juice or opium. It is a sterile, thick, black-green (resulting from bile pigments), odorless material first observed in the fetal intestine during the 3rd month of gestation which is the fecal material that accumulates in the fetal colon throughout gestation.³ It consists of an accumulation of debris, comprising desquamated cells from the intestine and skin, gastrointestinal mucin, lanugo hair,

fatty material from the vernix caseosa, amniotic fluid, and intestinal secretions. Most infants have their first bowel movement after birth. Occasionally, a fetus can pass meconium in utero.⁴ The present study was conducted to assess clinical spectrum of immediate outcome of neonate born through meconium- stained amniotic fluid.

MATERIALS & METHODS

The present study comprised of 65 newborns who had meconium staining of the amniotic fluid of both genders. Mothers were informed regarding the study and their written consent was obtained.

Data such as name, age, gender etc. was recorded. Parameters such as gestational weeks of the baby, mode of delivery of baby, antenatal USG if done noted etc. was recorded. Placenta was examined for calcifications. Intrapartum fetal monitoring (CTG) if done was noted for any fetal heart rate variability. Grading of meconium done either as thin or thick meconium. Type of baby noted as either vigorous or non- vigorous baby. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

	Total- 65	
Gender	Male	Female
Number	30	35

Table I shows that out of 65 patients, males were 30 and females were 35.

Table II Assessment of parameters

Parameters	Variables	Number	P value
Type of meconium	Thin	45	0.01
	Thick	20	
Type of Baby	Vigorous	42	0.03
	Non- vigorous	23	
Age of mother	<20 years	15	0.05
	20-35 years	18	
	>35 years	32	
Perinatal asphyxia	Present	32	0.95
	Absent	33	
Antenatal risks	PIH	11	0.05
	Anaemia	9	
	No Risks	20	
	GDM	14	

Table II shows that type of meconium was thin in 45 and thick in 20. Type of Baby was vigorous in 42 and non- vigorous in 23. Age of mother <20 years were 15, 20-35 years had 18 and >35 years had 32. Perinatal asphyxia was present in 32 and absent in 33. Antenatal risks were PIH in 11, anaemia in 9, no risk factor in 20 and GDM in 14 cases. The difference was significant (P< 0.05).

Table III Type of resuscitation required in MSAF babies

Type	Number	P value
Routine	48	0.01
Tracheal toileting with BMV	8	
BTV	9	

Table III shows that type of resuscitation performed was routine in 48, tracheal toileting with BMV in 8 and BTV in 9 cases. The difference was significant ($P < 0.05$).

DISCUSSION

The incidence of meconium aspiration syndrome varies between 1 and 5 percent of all deliveries where there has been meconium- stained liquor, with higher rates reported from North America compared to Europe.⁵ There are a number of factors associated with an increased risk of developing meconium aspiration syndrome.⁶ These include lack of antenatal care, black race, male fetus, abnormal fetal heart rate monitoring, thick meconium, oligohydromnios, operative delivery, poor activity, pulse, grimace, appearance and respiration (APGAR) scores, no oropharyngeal suctioning and the presence of meconium in the trachea. Many theories have been proposed to explain the passage of meconium in utero; however, the precise mechanisms remain unclear. The increased incidence of MSAF with advancing gestational age probably reflects the maturation of peristalsis in the fetal intestine.⁷ Motilin, an intestinal peptide that stimulates contraction of the intestinal muscle, is in lower concentration in the intestine of premature Vs postterm infants. Umbilical cord motilin concentration is higher in infants who passed meconium than in infants with clear amniotic fluid.⁸ Intestinal parasympathetic innervation and myelination also increase throughout gestation and may play a role in the increased incidence of passage of meconium in late gestation. In utero passage of meconium is also associated with fetal asphyxia and decreased umbilical venous blood PO₂.⁹ The present study was conducted to assess clinical spectrum of immediate outcome of neonate born through meconium- stained amniotic fluid.

In present study, out of 65 patients, males were 30 and females were 35. Mehar et al¹⁰, out of 399 total admissions in NICU, 62.4% were male babies and remaining 37.6% were female babies. Of the total 6.8% were cases of MAS, making females (10.7%) more prone compared to male (4.4%) while perinatal asphyxia came out to be 11.5%, making male (12%) more prone than female (10.7%). Post-term (odds ratio [OR] = 3.50 [CI: 0.39-31.42]) and term (OR = 2.58 [CI: 1.16, 5.75]) babies were having more risk of developing MAS compared to preterm ($P < 0.01$). Post-term (OR = 9.15 [CI: 1.91-43.75]) and term (OR = 2.67 [CI: 1.41-5.08]) babies were having more risk of developing perinatal asphyxia compared to preterm ($P < 0.01$). MAS babies are having 6.62 (CI: 2.85-15.38) times more risk of developing perinatal asphyxia ($P < 0.01$).

We found that type of meconium was thin in 45 and thick in 20. Type of Baby was vigorous in 42 and non- vigorous in 23. Age of mother <20 years were 15, 20-35 years had 18 and >35 yearshad 32. Perinatal asphyxia was present in 32 and absent in 33. Antenatal risks were PIH in 11, anaemia in 9, no risk factor in 20 and GDM in 14 cases. Shaikh et al¹¹ found that in this study 500 cases with clear liquor and 250 cases of meconium- stained liquor were selected from two cities, Lahore and Larkana. Out of these 55 (22%) patients had grade I meconium- stained liquor, 140 (56%) patients and 55 (22%) patients had grade II and grade III meconium- stained liquor respectively. The mode of delivery is significantly affected by

meconium staining of liquor. The effect of meconium- stained liquor was significant on time of delivery. There were 40 (16%) post- date deliveries in meconium- stained liquor as compared to 1% in subjects with clear liquor. The effect of meconium staining of liquor was significant on Apgar score, neonatal admission, meconium aspiration syndrome and neonatal deaths.

We observed that type of resuscitation performed was routine care in 48, BMV in 8 and BTV in 9 cases. Gupta *et al*¹² in a prospective study find out antenatal, intra partum and neonatal attributes in MSAF. 1426 live births occurring in 1500 consecutive deliveries over 1 year period were studied. Incidence of MSAF was 14.3%. Thick meconium 69.11%. Hepatitis in mother, fetal distress during labour and IUGR were significant factors associated with MSAF. Consistency of meconium had direct bearing on neonatal outcome. Severe birth asphyxia occurred in 27% with thick meconium and 6.3% with thin meconium. MAS was observed in 6.38%. All deaths occurred in thick meconium group and were associated with SGA.

CONCLUSION

Authors found that maximum babies had thin type of meconium. Perinatal asphyxia was seen in maximum babies.

REFERENCES

1. Alchalabi H, Abu-Heija AT, El-Sunna E, Zayed F, Badria LF, Obeidat A. Meconium-stained amniotic fluid term pregnancies - a clinical view. *J Obstet Gynaecol.* 1999 May; 19 (3): 262-4.
2. Berkus MD, Langer O, Samueloff A, Xenalkis EM, Field NT, Ridgway LE. Meconium-stained amniotic fluid: increased risk for adverse neonatal outcome. *Obstet Gynecol.* 1994 Jul; 84 (1): 115-20.
3. Sheiner E, Hadar A, Shoham-Vardi I, Hallak M, Katz M, Mazor M. The effect of meconium on perinatal outcome: a prospective analysis. *J Matern Fetal Neonatal Med.* 2002 Jan; 11 (1): 54-9.
4. Greenwood C, Lalchandani S, Macquillan K, Sheil O, Murphy J, Impey L. Meconium passed in labor: how reassuring is clear amniotic fluid? *Obstet Gynecol.* 2003 Jul; 102 (1): 89-93.
5. Gonzalez de Dios J, Moya Benavent M, Barbal Rodoreda A, Dura Trave T, Juste Ruiz M, Castano Iglesias C, Gonzalez Montero R. Neonatal morbidity associated with meconial amniotic fluid. *An Eps Pediatr.* 1998 Jan; 48(1): 54-9.
6. Ziadeh SM, Sunna E. Obstetric and perinatal outcome of pregnancies with term labour and meconiumstained amniotic fluid. *Arch Gynecol Obstet.* 2000 Sep; 264(2): 84-7.
7. Manju Lata Sharma. A study of newborn infant with meconium stained amniotic fluid congres' de Valencia. 2000 Sep; 1-2/
8. Narang A, Nair PM, Bhakoo ON, Vashishi: K. Management of meconium stained amniotic fluid: A team approach. *India Pediatr* 1993; 30: 9-13.
9. Cleary GM, Wiswell TE. Meconium-stained amniotic fluid and the meconium aspiration syndrome: An update. *Pediatr Clin North Am* 1998; 45: 511-529.
10. Mehar V, Agarwal N, Agarwal A, Agarwal S, Dubey N, Kumawat H. Meconium-stained amniotic fluid as a potential risk factor for perinatal asphyxia: a single-center experience. *Journal of Clinical Neonatology.* 2016 Jul 1;5(3):157.
11. Shaikh EM, Mehmood S, Shaikh MA. Neonatal outcome in meconium stained amniotic fluid-one year experience. *JPMA.* 2010;60(9):711-4.

12. Gupta V, Bhatia BD. Mishra OP. Meconium stained amniotic fluid: Antenatal, intrapartum and neonatal attributes. *Indian Pediatr* 1996; 33: 293-297. 4. Suresh GK, Sarkar S. Delivery room management of infants born through thin meconium stained liquor. *Indian Pediatr* 1995; 32: 1177-1181.