

MECONIUM STAINING OF AMNIOTIC FLUID - SIGNIFICANCE AND FETAL OUTCOME

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SUMMARY:

The significance of meconium staining of amniotic fluid (MSAF) as a sign of fetal distress is controversial. In 2493 deliveries, 350 cases i.e. 14.0% had MSAF. Out of 350 cases 129 patients had associated fetal heart rate variations. Majority of patients (72%) had spontaneous vaginal delivery. Incidence of LSCS was 10.6% and it was 4 times higher in patients with thick MSAF than that of patients with thin MSAF. Fetal mortality was 3.71% and 6.85% of babies had morbid conditions.

INTRODUCTION:

Meconium staining of amniotic fluid (MSAF) in cephalic presentation is a potentially ominous sign for fetal wellbeing, few still consider it as a sign of fetal distress while others do not. However, when this sign appears during labour its significance for a particular patient remains obscure. At birth one infant may cry lustily despite heavily stained liquor while another may be stillborn. At places where facilities for intrapartum cardiotocography, and fetal scalp blood PH sampling are available MSAF may have little significance. But, at most places in our country type of meconium and stage of

labour in correlation with fetal heart rate variations should form important factors in deciding time and mode of delivery.

Here we present 350 cases of MSAF with an attempt to assess its significance in terms of fetal outcome.

MATERIALS AND METHODS

Three hundred and fifty consecutive cases of MSAF in cephalic presentation were studied, who delivered at B.Y.L. Nair Charitable Hospital from March 1989 to December 1989. Colour of amniotic fluid and type of meconium was noted at time of amniotomy or spontaneous rupture of membranes and at the time of delivery. Patients were carefully examined for any antepartum or intrapartum risk factors and were

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clinically monitored during labour. Depending upon type of meconium, fetal heart rate variations, stage of labour and other risk factors, time and mode of delivery was decided. After delivery the condition of cord and placenta was noted. Fetal well being was assessed by apgar score at one minute and five minutes and resuscitation was given whenever required. Babies were carefully followed up in neonatal period to note any morbid condition.

Depending upon nature of meconium all patients were divided into two groups. Group A with thin MSAF and group B with thick MSAF and results were compared in both groups.

RESULTS AND ANALYSIS

From March 1989 to December 1989, total number of deliveries were 2493 giving incidence of MSAF as 14.0%. Among 350 cases 179 patients had thinly meconium stained liquor while in other 171 patients amniotic fluid had thick meconium.

Out of 350 cases 234 patients were in age group of 21 to 30 years, 93 were less than 20 years and 23 patients were 31 years or older.

One hundred and thirty four patients were primiparae and 216 were multiparae. Prolonged pregnancy or postdatism is one of the important factors in meconium staining as stated by Hellman et al (1958) and Goud & Krishna (1989). However, in our study many patients did not know their exact last menstrual period, hence correct incidence of postdatism could not be found.

MECONIUM STAINING AND FETAL DISTRESS

Out of 179 patients with thin MSAF 44 (24.58%) had associated clinical fetal distress and in 171 cases with thick MSAF 85 i.e. 49.7% had fetal heart rate variations (Table I)

ASSOCIATED RISK FACTORS :

Among the significant antepartum risk factors toxemia of pregnancy was present in 36 cases while prolonged labour was the most common intrapartum risk factor which might have led to passage of meconium in amniotic fluid. Prematurity, cord complications and APH were amongst other factors (Table II).

TABLE I

Meconium Staining & fetal distress

	Thin MSAF	Thick MSAF
Ass. with fetal distress	44 (24.58%)	85 (49.7%)
No fetal distress	135	86
Total	179	171

TABLE II

Associated Risk Factors

Ass. factors	Number	Percentage
Toxaemia	36	10.28%
Prolonged labour	24	6.85%
Prematurity	19	5.42%
Cord Complications	11	3.14%
A.P.H.	10	2.85%
I.U.G.R.	09	2.57%
Postdatism	06	1.71%
P.R.O.M.	06	1.71%
Malpositions	06	1.71%
Cong. anomalies in baby	02	0.57%

MODE OF DELIVERY IN MSAF

Out of 179 patients with thin MSAF, 147 (82.1%) had normal vaginal delivery while in other group out of 171 patients only 105 i.e. 61.4% patients delivered normally. Incidence of operative delivery was more in thick MSAF group with caesarean rate of 16.9% as compared to 4.5% in other group. (Table III).

FETAL ASPHYXIA IN MSAF

Most of the babies cried immediately after birth and showed no signs of asphyxia. There was only one stillbirth in patient with thick meconium stained liquor. (Table IV).

FETAL OUTCOME IN MSAF

Out of 350 babies 24 i.e. 6.85% developed morbid conditions like septicemia, meconium aspiration etc. requiring admission to intensive neonatal care unit while fetal mortality was 13.0 (3.71%) out of which one was stillbirth and 12 were neonatal deaths. Out of these 12 babies, 9 were spontaneous vaginal deliveries and one each of vacuum, forceps & LSCS (Table V)

BIRTH WEIGHT AND MSAF

Fujikara and Klionsky (1975) found incidence of MSAF to be significantly increased in babies of birth weight greater than 3501 gms. In our study out of 30 babies weighing more than 3.5 kg, 21 babies were from thick meconium stained group. (Table VI).

DISCUSSION:

The incidence of MSAF varies from as low as 1.5% (Hellman et al, 1958) to as high as 22% (Meis et al, 1978). In this study it was 14%. Significance of MSAF is still controversial. Miller et al (1975) state, 'Presence of meconium in amniotic fluid without fetal heart rate variations or fetal acidosis is not a sign of fetal distress and need not be an indication for active intervention.' In our series out of 350 cases, 252 i.e. 72% were normal deliveries, while remaining 28% were operative deliveries.

Since majority of patients who exhibit MSAF in labour will be delivered spontaneously of a normal, healthy baby, obstetricians may be

TABLE III

Mode of delivery

Mode of delivery	Thin MSAF	Thick MSAF	Total
Normal Delivery	147 (82.1%)	105 (61.4%)	252 (72%)
Vacuum	08 (4.5%)	10 (5.8%)	18 (5.1%)
Forceps	16 (8.9%)	27 (15.7%)	43 (12.2%)
L.S.C.S.	08 (4.5%)	29 (16.9%)	37 (10.6%)
Total	179	171	350

TABLE IV

Fetal Asphyxia in MSAF

	Thin MSAF	Thick MSAF	Total
No Asphyxia	143	104	247
Mild Asphyxia	18	33	51
Mod. Asphyxia	10	18	28
Severe Asphyxia	08	15	23
Fresh Stillbirth	00	01	01
Total	179	171	350

TABLE V
Fetal outcome in MSAF

	Thin MSAF	Thick MSAF	Total
Neonatal Morbidity.	10	14	24 (6.85%)
Still births	00	01	01 (0.28%)
Neonatal deaths	03	09	12 (3.42%)
Total deaths	03	10	13 (3.71%)

TABLE VI
Birth Weight and MSAF

Birth weight	Thin MSAF	Thick MSAF
2.45 kg or less	58	47
2.5 kg to 3.45 kg	112	103
3.5 kg and more	09	21
Total	179	171

reluctant to perform operative delivery. In fact Leonard (1962) reviewed 100 cases of MSAF and stated that, 'To prevent 4 perinatal deaths 42 extra cesareans would have been necessary.' In our series overall incidence of cesarean was 10.6% which was 4 times higher in patients with thick MSAF than in patients with thin MSAF. In a series Johnson (1968) found incidence of LSCS as 5.5%, forceps as 20.9% and 73.2% patients had normal delivery. Although most of the patients will have spontaneous vaginal delivery it is worth noting that out of 13 deaths 10 were spontaneous vaginal deliveries in our series. The fetal mortality in our study was 3.71%. Pendse (1983) found mortality of 8% and Goud & Krishna (1989) found mortality of 7.26%. Mortality was more in patients with thick MSAF.

Hence although MSAF alone is not an indicator of fetal distress its presence especially when it is thick in correlation with other factors should be viewed seriously as it is potential danger sign for baby.

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