MECONIUM ASPIRATION SYNDROME : A CLINICAL STUDY

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ABSTRACT

Forty two babies with Meconium aspiration syndrome managed in neonatal intensive care unit of a service hospital were analysed. Incidence was 1.7 per cent. Twelve babies were delivered by caesarean section and 30 babies by vaginal route. Seventeen deliveries were conducted by team of gynaecologists, pediatrician and nursing staff whereas 25 deliveries were conducted by nursing staff alone. Out of total babies with meconium aspiration syndrome, thin meconium detected in 9 and thick meconium detected in 33 babies during delivery. Five babies were preterm and none were less than 35 weeks of gestation. Pneumonia detected on right side in 24 patients, on left side in 6, and both sides in 12 patients. Twenty seven babies had asphyxia at birth, 13 babies had seizure and 6 babies had air leak syndrome and overall mortality was 13 (31%).

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KEYWORDS: Meconium aspiration syndrome; Meconium stained amniotic fluid.

Introduction

Meconium aspiration syndrome (MAS) is a common clinical entity usually associated with high mortality and morbidity. It is defined as a clinical syndrome characterised by meconium staining of amniotic fluid with or without its presence in oropharynx, trachea or both, development of respiratory distress after birth and radiological evidence of aspiration pneumonia [1]. The outcome of MAS primarily depends on type, amount of meconium aspirated and perinatal care offered to the baby during delivery. Proper perinatal care, planned team approach to Meconium Stained Amniotic Fluid (MSAF) babies has changed the morbidity and mortality of MAS.

Material and Methods

A prospective study was conducted in Command Hospital from 1993 to 1996 to analyse babies with MAS. Babies delivered outside were not included. Detailed antenatal history of mother was recorded. Babies delivered to mothers with prolonged rupture of membranes, foul smelling liquor amnii, febrile illness during perinatal period were not included in the study. Babies with respiratory distress, radiological evidence of aspiration pneumonitis, and history of meconium staining amniotic fluid during delivery were labelled as MAS and were included in the study. All these babies were screened for sepsis with micro ESR, blood culture, toxic granules and band form leucocytes in the peripheral smear, and 'C' reactive protein. Positive septic screen babies were excluded from the study. These babies were managed in Neonatal Intensive Care Unit with chest physiotherapy, postural drainage, suction of oropharynx, antibiotics-ampicillin and gentamicin, oxygen and ventilatory support where indicated.

Results

During the study period total 2432 babies were born, of which 42 babies had MAS giving incidence of 1.7 per cent. Twenty three mothers had regular antenatal checkup, 21 were primi and 23 were multiparous. Twenty two babies were male and 20 babies were female. Thirty babies were delivered by vaginal route and 12 by caesarean section. Seventeen deliveries were conducted by team of gynaecologists, pediatrician and nursing staff whereas rest 25 deliveries were conducted by nursing staff alone. Out of total babies with MAS, history of thick meconium staining during delivery was present in 33 babies and thin meconium in 9 babies. Five babies were preterm and none were less than 35 weeks of gestation. Thirty two babies were appropriate for date and 10 babies were small for date. Radiological evidence of aspiration pneumonia seen on right side in 24 babies, on left side in 6 babies and on both sides in 12 babies. In majority of cases radiological picture cleared up in less than 7 days time. Seven babies were ventilated with intermittent positive pressure respiration of which 5 survived. Out of the total 42 babies with MAS studied, 29 survived with mortality rate of 31 per cent. Table shows the morbidity and mortality in babies with MAS.

Discussion

Meconium is a sterile thick, viscous darkgreen intestinal contents of fetus and is present by 16 weeks of gestation [2]. It contains residue of bile, intestinal juice, swallowed amniotic fluid containing lanugo hair and chemical substances like lipids, carbohydrates, nitrogen, electrolytes. Normally a baby passes meconium within 24 hours of birth [3]. But in certain situations baby passes meconium either in the intra-uterine life or some times during labour producing MSAF. Aspiration of this MSAF by the neonate leads

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TABLE
Morbidity and mortality associated with MAS (n=42)

Problems	No of cases	Percentage
Birth asphyxia	27	64.3
Hypoxic ischemic encephalopathy	12	28.6
Seizures	13	31
Air leak syndrome	6	14.3
Hypoglycemia	6	14.3
Polycythemia	6	14.3
Mortality	13	31

to aspiration pneumonitis, respiratory distress and MAS.

MAS, is common and incidence reported is upto 2 per cent of all deliveries and a mortality rate of 28-40 per cent [4-10]. In this study the incidence of MAS is 1.7 per cent which is well within the acceptable limits.

Mathews and Warshaw [11] reported most of the cases of MAS at 37 weeks of gestation and none less than 34 weeks. Narang [12] reported MSAF in 95.4 per cent term babies and none were less than 34 weeks of gestation. In this study majority (88%) of babies were 37 weeks of gestation or more.

Meconium staining of amniotic fluid is reported in 10-20 per cent of deliveries whereas MAS is reported in 2 per cent. Thus all the babies with MSAF do not develop MAS. The severity of respiratory symptoms and signs, morbidity and mortality is directly related to the amount and thickness of meconium aspirated [4,5,7,9]. In the present study thick meconium staining was more associated with MAS than thin meconium staining during delivery as reported by others [5,11-13].

Aspiration pneumonia is more common on right side than left, because the right main bronchus is shorter, straighter, wider and it is more in line with trachea [14,15]. We had aspiration pneumonitis on right side in majority (57%) of cases. Radiological picture usually clears up within 3-4 days time [14].

In this study birth asphyxia of moderate to severe in nature was detected in 27 cases and hypoxic ischemic encephalopathy (HIE) in 12. Seizure was detected in 13 cases and all the babies with HIE had seizures. Air leak syndrome in MAS has been reported in 8-15 per cent of cases by different authors [5,9,12]. We had pneumothorax and pneumomediastinum in 6 (14.3%) cases. Persistent pulmonary hypertension secondary to MAS is a well known entity and incidence of 3.8 per cent has been reported by Narang [12] but, we did not come across any such complication.

Hypoglycemia and polycythemia were detected in 6

(14.3%) cases and not related to MAS but because of hypoxia and small for date babies [1,16]. MAS is associated with high mortality of 28-40 per cent and it is greatly influenced by type of perinatal care provided during delivery [1,6,9]. It can be greatly reduced by aggressively planned team approach of pediatrician and gynaecologist to MSAF babies during labour [4,12,17].

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