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RESEARCH ARTICLE

IMPORTANCE OF TRANSCERVICAL AMNIOINFUSION FOR MSAF IN AN INSTITUTION WITHLIMITED RESOURCES

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ABSTRACT

Introduction: Meconium stained amniotic fluid during labor management possesses a dilemma to the obstetrician in an under resourced set up. The passage of meconium in utero is associated with significant perinatal mortality and morbidity especially meconium aspiration syndrome. Amnioinfusion can reduce the incidence of perinatal morbidity and mortality in places with limited resources for peripartum surveillance.

Methods: A prospective study of 50 women with thick / thin meconium stained amniotic fluid fulfilling the inclusion criteria, who underwent trans cervical amnioinfusion with normal saline . Periodic checking of underpads for clearing or thinning of meconium was noted. A maximum of 1800 ml of NS was instilled. The thinning of meconium, mode of delivery, APGAR score at 1 min and 5 min, meconium aspiration, MAS, NICU admissions were noted.

Results: Out of 44 cases of thick meconium at the time of detection 13.64% became moderate, 54.55% became thin whereas 31.82% remained as such. 68.18% had vaginal delivery, 4.55% had forceps delivery and 27.27 % had LSCS for fetal distress. Apgar score at 1 min < 5 was seen in 34.09%, between 5-7 in 85.91% cases and Apgar score at 5 minute <5 in 6.82%, 5-7 in 50%, >7 in 43.18% cases of thick MSAF respectively. Meconium aspiration was seen 76%babies. NICU admission was 20%. X Ray abnormality was seen in 4.55% cases and MAS 2.27% cases.

Conclusion: In institutions with limited peripartum surveillance, transcervicalamnioinfusion is effective in improving both maternal and neonatal outcome and preventing perinatal loss due to meconium aspiration syndrome.

INTRODUCTION

Meconium stained amniotic fluid during labor is acommon problem (7-22%) encountered. Its management possesses a dilemma to the obstetrician especially in under resourced set up wherefacilities such as continuous cardiotocographic monitoring and fetal scalp blood pH sampling is not available. The passageof meconium in utero is associated with significant perinatal mortality and morbidity. Meconium aspiration syndrome is seen in 6-30% cases of MSAF and accounts for 20% of all perinatal deaths.Amnioinfusion is defined as fluid instillation into the amniotic cavity through a catheter usually performed transcervically during intrapartum period. Amnioinfusion in MSAF acts by diluting the meconium thereby reducing its toxicity and removing meconium by irrigation and thereby preventing cord compression and hence gasping. The greatest attraction of amnioinfusion is that it is easy to perform and inexpensive. This study was carried out in context of developing world to test the hypothesis that amnioinfusion can reduce the incidence of perinatal morbidity and mortality in places with limited resources for peripartum surveillance.

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MATERIALS AND METHODS

50 women, 44 with thick and 6 with thin meconium were taken for the study. The selection criteria included nulliparous or multiparous women in labor with singleton pregnancy presenting with vertex, with adequate pelvis and gestational age more than 36 weeks,with thick/thin meconium staining of amniotic fluid, with live fetus and no fetal heart rate decelerations.On admission a detailed history, general examination and obstetric examination was done. Amnioinfusion was done by inserting a plastic infant feeding tube size 10 above the baby's head transcervically under strict asepsis. To the outer end of the tube a prefilled intravenous drip set with NS was connected.Initially a bolus dose of 500ml NS was instilled at the rate of 20ml/min followed by a maintenance dose of 500ml NS instilled at the rate of 60-180ml/hr. The infusion was continued till amniotic fluid became clear or thinning of meconium was seen. The procedure was considered a failure if no change in the consistency of the amniotic fluid was seen after infusing 1800ml of NS.

Periodic assessment regarding color of amniotic fluid on the underpads was done every 30minute till amnioinfusion was terminated. Oxytocin was used for augmentation of labor

whenever indicated. FHR was recorded with an ordinary stethoscope every 30minute in first stage and after every contraction in second stage of labor. Delivery was conducted as normal or assisted vaginal delivery (forceps orventuse application) or LSCS depending on the indication. The baby was attended by the in house pediatrician immediately after birth, a thorough nasopharyngeal suction was done, presence of meconium above and below the vocal cords was noted, endotracheal suction followed by endotracheal intubation was done in cases where meconium was present below vocal cords , APGAR score at 1 minute and 5 minute noted. The baby was shifted to NICU if APGAR score remained poor at 5 minute. X Ray chest of all babies was done to rule our MAS.

The baby was followed up in NICU or ward depending on its condition till discharge. Similarly the mother was followed up in the ward for PPH, febrile illness, subinvolution of uterus till discharge.The data was entered in a predetermined proforma and statistical analysis was done.

RESULTS

A total number of 50 cases with thick/thin MSAF was included in this study. Majority of the patients (30) belonged to age group 21- 25 years (60%). 36 women were primipara (72%). 26 cases belonged to gestational age between36-38 weeks (52%), 16 were between 39-40 weeks(32%),8 were >40 weeks (16%).27 women had no other complications (54%)whereas 14 women had PIH (28%). 46 patients had cervical dilatation between 3-6cm (92%). 44 cases had thick meconium (88%) rest had thin meconium staining. Out of 44 cases of thick meconium at the time of detection 13.64% (6 out of 44) became moderate, 54.55% (24 out of 44) became thin whereas 31.82%(14 out of 44) remained as such. After amnioinfusion 30 patients underwent vaginal delivery (68.18%), 2 had forceps delivery (4.55%), and 12 had LSCS for fetal distress (27.27 %). Apgar score at 1 min < 5 was seen in 15/44 (34.09%), between 5-7 in 29/44 (85.91%) cases of thick MSAF. Apgar score at 5 minute <5 in 3/44 (6.82%), 5-7 in 22/44 (50%), >7 in 19/44 (43.18%) cases of thick MSAF. 37 babies has meconium aspiration (76%), 25 had meconium above vocal cords (65.79%)whereas 13 had meconium below the vocal cords (34.21%). 10 babies with thick meconium staining were admitted to NICU (20%). Only 3 babies out of 10 admitted remained in NICU for >3 days (30%). X Ray abnormality was seen in 2 babies (4.55%) and MAS seen in 1 baby (2.27%). 3 still births were seen (6.82%) and one neonatal death (2.27%) was seen. 2/44 patients had PPH (4.55%) and 1/44 had febrile morbidity(2.27%). Overall mean duration of hospital stay was 4.0 days.

DISCUSSION

After amnioinfusion of 50 cases, of which 44 cases of thick and 6 cases of thin MSAF, it was seen that there is thinning of meconium in a large majority of patients with thick meconium to either moderate or thin meconium leading to less danger of MAS inspite of meconium aspiration. (Sadovsky *et al.,* 1989) showed significant decrease in thick meconium in amnioinfision and non amnioinfusion group respectively.(Hofmeyer, 2002) showed that amnioinfusion was associated with reduction with heavy meconium staining of liquor. The LSCS rate in this study was 27.27 %. (Lokw and Roggers*et al.,*1993; Vincent and Hicock 1993) showed visible Reduction in CS rates after amnioinfusion.In this study there was visible reduction in number of neonates with APGAR score <5 at 1 minute and 5 minute afteramnioinfusion. (Wenstrom,1989) showed significant improvement in 1 minute APGAR score in patients with amnioinfusion. In the present study there was asignificant reduction in NICU admissions. Similarly (Hofmeyer, 2002) reported that under limited perinatal surveillance there is significant reduction in admission to NICU and requirement for neonatal ventilation in patients with amnioinfusion (RR 0.56, 95% CI 0.39-0.79). The incidence of MAS was lower in this study which was comparable to other studies done before.

S.No.	Study conducted by	Year	Results	
			Study	Control
1.	Wenstrom*et al.*	1989	3.52%	-
2.	Macri*et al.*	1992	0%	5.88%
3.	Cialone*et al.*	1994	2%	13%
4.	Sahu*et al.*	2003	1%	12.3%
5.	Sood*et al.*	2004	6%	20%

The still birth rate and neonatal death was 5.88% and 2.27% repectivelyin this study and was probably due to decrease in the time interval between amnioinfusion and delivery and the baby probabaly aspirated meconium before the dilutional effect of amnioinfusion could take place. (Hofmeyer in Cochrane review 2002) stated that amnioinfusion was associated with reduced perinatal mortality (RR 0.34,95%CI 0.11-1.06). In the present study febrile morbidity was seen in 2.27% patients is believed to due to the diluting effect on the bacteria entering uterus by amnioinfusion similarly (Hofmeyer, 2002) found that there was decrease in febrile morbidity in patients with amnioinfusion. This is different from studies by (SPONG *et al.,* 1994) and (Usta*et al.,* 1995) both studies showed that incidence of endometritis was higher in patients undergoing amnioinfusion. The mean duration of hospital stay was 4.4 days. (sood*et al.,* 2004) found that hospital stay was significantly reduced in women with amnioinfusion probably due to decreased incidence of LSCS.

Conclusion

Transcervicalamnioinfusion in cases of meconium stained amniotic fluid in labor is a safe, simple procedure in correcting fetal distress. In institutions with limited peripartumsurveillance, it is effective in improving both maternal and neonatal outcome and thus preventing perinatal loss due to meconium aspiration syndrome.

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