Is gastric lavage needed in neonates with meconium-stained amniotic fluid?

Abstract
We compared the incidence of complications from meconium-containing gastric fluid in a group of neonates born with meconium-stained amniotic fluid (MSAF) who did not routinely have gastric lavage prior to feeds, versus a group who had elective gastric lavage before the first feed. In the first group, 275 neonates born with MSAF were fed without prior gastric lavage. While 13 developed feeding problems, the other 262 infants (95%) who did not undergo routine gastric lavage remained free of later feeding difficulties or secondary meconium aspiration. In the second group, all 227 neonates with MSAF had elective gastric lavage performed after birth. All remained free of later feeding difficulties or secondary meconium aspiration.

Conclusion
Our data suggest that gastric lavage is not necessary in most neonates born with meconium-stained amniotic fluid, regardless of the thickness of the meconium-stained fluid, as no complications from meconium-containing gastric fluid were observed.

Key words
Meconium-stained liquor · Gastric lavage · Neonatology

Introduction
Performing early gastric lavage after birth in all neonates with meconium-stained amniotic fluid (MSAF) is still practiced in many hospitals. Although unsubstantiated, it is thought that the presence of meconium in the stomach can act as a chemical irritant, interfering with gastric function and causing undigested milk curds and feeding problems. The American Heart Association and the American Academy of Pediatrics currently recommend suctioning the stomach after tracheal suctioning to prevent aspiration of meconium-containing gastric contents. [1] The same recommendation is made in some paediatric and nursing text books, without supporting evidence [2, 6, 8, 9].

This recommended practice is not without risks: it can cause bradycardia; apnoea [3], vomiting, damage to the newborn’s larynx, oesophagus or trachea, and newborn aspiration [5]. When the procedure is not proven to be necessary, it causes an unnecessary waste of nursing time and medical equipment. It may also unduly delay the establishment of early breast-feeding and of maternal-infant bonding.

We therefore undertook a study to determine whether complications resulting from meconium-containing gastric fluid occur more frequently when elective gastric lavage prior to feeds is not carried out compared to when gastric lavage is routinely performed after birth.

Materials and methods
This was an observational randomized prospective study over a 2-year period. It was not blinded. All neonates were offered a feed (breast-feeding or formula) within 2 h of birth, unless one of the...
followed by conditions existed: birth asphyxia, haemodynamic or respiratory distress, severe pallor, prematurity < 34 weeks of gestation, or obvious major congenital anomalies requiring evaluation or surgery soon after birth (abdominal wall defects, diaphragmatic hernia, etc.). Any neonates with any of these criteria were excluded from the study.

Meconium-stained liquor was defined as thick when turbid, viscous or containing particulate matter; otherwise it was defined as thin. Clearing of the nose and mouth by suction was carried out immediately at birth in all infants with MSAF but no aspiration of the gastric contents was performed in any infant. Visualization of the vocal cords by laryngoscopy and tracheal suctioning was performed only in neonates with thick MSAF who also had neonatal depression.

Neonates with MSAF born on even days underwent elective gastric lavage within 1 h after birth and before the first feed, while those with MSAF and who were born on odd days had gastric lavage performed only when they developed feeding problems. Those were said to occur if, at the first feed, retching or vomiting were observed, feeding was very slow or poor suck was noticed by the mother or nursing staff. The feeding was qualified as poor or slow when the baby was not heard to swallow after every 1 to 2 sucks and when the suck-swallow pattern did not last more than 10 min. The suck was judged weak when the baby appeared to be just mouthing the nipple without regular swallowing or no sucking effort was noted. [7] All data were entered by nursing staff on a data sheet designed for this study. The study was approved by the ethics committee and the mothers gave their informed consent.

Results

During the study, from a total of 5801 neonates, 514 (8.8%) were born with MSAF. It was thin in 364 (71%) and thick in 150 (29%). Twelve infants had meconium aspiration syndrome (2.5% of all MSAF and 0.2% of all deliveries) and were excluded from the study.

A total of 232 infants with MSAF were born on even days, 5 had meconium aspiration syndrome and were excluded; the remaining 227 infants were submitted to routine gastric lavage after birth. The procedure was well tolerated in all. No apnoea, secondary vomiting with aspiration, later feeding difficulties or secondary pulmonary aspiration of meconium-containing gastric fluid were observed.

A total of 282 neonates with MSAF were born on odd days, 7 had meconium aspiration syndrome and were excluded. In the remaining 275 infants, gastric lavage was undertaken only if feeding problems developed. These occurred in 13 (4.7%) of those infants, eight (61.5%) with thin and five (28.5%) with thick MSAF, all of whom required lavage. The procedure was well tolerated in all 13 babies and no apnoea or secondary vomiting with aspiration were observed. The remaining 262 babies with MSAF who did not have feeding problems and did not require gastric lavage (95.3%) did not later develop feeding difficulties or secondary pulmonary aspiration of meconium-containing gastric fluid.

Discussion

Although the study was randomized by even or odd days, it was not blinded and bias could not therefore be excluded with certainty. Blinding the procedure by a person independent of the nursing team would have strengthened the study. Nevertheless, our observation sheds some light on this poorly studied but widely used and recommended practice.

MSAF occurred in 8.8% of all deliveries, similar to other studies [2]. The MSAF was thick in less than one-third of cases. In the group who did not undergo elective gastric lavage, the incidence of later feeding problems or secondary pulmonary aspiration of meconium-containing gastric fluid was nil, identical to the group where gastric lavage was routinely performed after birth. This finding provides reassurance that neonates with MSAF are not prone to these hypothetical complications if lavage is not carried out.

Contrary to some recommendations, our data suggest that gastric lavage is not necessary in most neonates born with MSAF, regardless of the thickness of the meconium-stained fluid [1, 2, 4, 6, 8, 9]. The majority of neonates with MSAF (over 95%) do not have feeding problems and their natural history seems to be devoid of the theoretical complications feared from meconium remaining in their stomachs, even when gastric lavage is not performed routinely. The resulting reduction in the number of lavages on those same neonates resulted in savings on resources (nursing time and medical equipment) without increase in morbidity and allowed a quicker establishment of breast feeding and maternal-infant bonding in neonates who were spared this unnecessary procedure. As no feeding problems developed after gastric lavage, whether done routinely or because of feeding difficulties, it may be suggested that this procedure may be effective in preventing and treating the rather rare occurrence of feeding difficulties in infants born with MSAF (less than 5%) and therefore to be reserved to that small group when they develop feeding difficulties.

Acknowledgements The authors, who were employed by Saudi Aramco during the time the study was conducted, are indebted to M. Roach, RGN, and her nursing staff for participation in data collection. The use of Saudi Aramco Medical Service Organisation facilities is gratefully acknowledged.

References

5. Klaus HK, Fanaroff AA (1979) Care of the high risk neonate, 2nd edn. WB Saunders, Philadelphia