Aspiration pneumonia in association with oral vitamin K

Most infants born in the British Isles now receive vitamin K prophylaxis, and the trend towards oral administration continues.1 With the awareness that vitamin K is well absorbed from the gut2 and following publication of the report linking intramuscular vitamin K and childhood cancer,3 oral vitamin K prophylaxis has become more widespread. However, because of lack of uniform national policy, the practice of vitamin K administration varies from region to region. Cases of aspiration or anaphylaxis following oral vitamin K administration in neonates have not been previously reported.

We report three cases of aspiration associated with oral vitamin K, Orakay, the preparation uniformly used in Northeast England. Acute respiratory distress developed in previously well, breast fed neonates following administration of Orakay at home. All required hospital admission, and two of them had radiological evidence of aspiration.

Case 1: a 14 day old term boy was well until a rectal temperature of 39°C was recorded. He immediately developed a cough, tachypnoea, and grunting, cried inconsolably, and refused feeds. On admission, he was apyrexial but had features of respiratory distress. A chest radiograph showed inﬁltration of the right perihilar and lower zones. A septic screen was normal. Two further doses of Orakay were given under hospital supervision and remained well.

Case 2: a 14 day old girl was well until the community midwife gave a second dose of Orakay. The baby coughed straight afterwards and remained very unsettled. Within an hour, she was grunting, tachypnoeic, and refusing feeds. On admission, she had features of respiratory distress. Oxygen saturation was 85% in air. A chest radiograph showed bilateral increased perihilar shadow. A septic screen was negative. She was discharged home on formula milk, and therefore did not need further Orakay.

Case 3: a 28 day old term girl was thriving and had tolerated two doses of Orakay well. When her father administered a third dose, she started to cough, became pale, unsettled, and tachypnoeic, and refused feeds. On examination, she had features of respiratory distress. A septic screen was negative. A chest radiograph was normal. After discharge, she was given a fourth dose of Orakay under hospital supervision and remained well.

Of note, even oral administration of vitamin K can occasionally be hazardous. This is of particular concern because Orakay is not licensed in the United Kingdom. There is an urgent need to develop a consensus policy and a product that is licensed, effective to administer, and has minimal adverse effect.

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References
Positioning long lines: response to Reece et al

Percutaneously inserted central venous lines are widely used in neonatal intensive care to administer parenteral nutrition and medications. It is important to ascertain the position of the line tip before use as incorrectly positioned long lines can lead to life-threatening complications like cardiac tamponade and pulmonary oedema.

Reece et al suggested that it is prudent to use a routine contrast radiograph to localise the line tip in newborn infants. We would like to comment on their suggestion and report a relevant study that has been performed on our neonatal unit.

Intravenous soluble contrast is not commonly used in neonates and very little is known about its potential side effects in premature infants. Data in children have shown a number of possible side effects, including hypotension and cardiac arrhythmia.

Moreover, obtaining an intravenous contrast radiograph of a long line would require additional medical and nursing time as a doctor would have to “grow up” for the procedure. This may not belogistically feasible in some busy neonatal units, especially out of hours.

Reece et al were unable see the line tip clearly on plain radiographs, even after a contrast study. This was due to delay between the injection of contrast and the radiographer exposing the film. This shows that fine coordination is required between the radiographer and the person injecting the contrast. Specific training may be necessary.

We performed a retrospective study of the reliability of plain radiographs in identifying the true line tip in our tertiary neonatal intensive care unit. Over a 10 month period all 27 babies who had long lines inserted were included. In all cases an Epicutaneo-Cava-Katheter (Vygon, UK) was inserted. This is the same catheter as that used by Reece and colleagues.

Our placement is erroneous since the vast majority of infants were studied in different positions—upright, 45° head up tilt, prone and supine. As suggested by the authors, since their infants were studied in different positions that is, supine in their study and prone in our study.

Effect of head up tilting on oxygenation

We read with interest the paper by Dimitriou et al in which it was confirmed again that head up tilting to 45 degrees results in better oxygenation in stable preterm neonates. However compared with our study, in which the same effect was observed,there is a (probably) significant difference. Their infants were studied in the horizontal prone, in the horizontal supine and in the 45° head up tilt supine position whereas in our study all infants were studied in the prone position including the 45° head up tilt.

We then hypothesised that the combination of the prone position and the 45° head up tilt could facilitate diaphragmatic activity.

We do not think that this hypothesis can be totally dismissed by the results of Dimitriou et al as suggested by the authors, since their infants were studied in different postures that is, supine in their study and prone in our study.
Effect of salt supplementation of newborn premature infants on neurodevelopmental outcome at 10–13 years of age

I read with interest the report by Al-Dahhan and colleagues on the beneficial effect of NaCl supplementation of preterm infants during the neonatal period on their later neurodevelopmental outcome. They found better memory, learning, language, and educational performances at the age of 10–13 years in preterms who received 4–5 mmol/kg/day NaCl compared with those not receiving NaCl supplement. In this regard it is relevant to mention our recent findings describing a new aspect of the relation of neonatal sodium homeostasis to central nervous system function. Namely, we showed that hyponatraemia is one of the most significant risk factors for development of sensorineural hearing impairment detected by transient evoked otoacoustic emission and confirmed by auditory brainstem response. In addition, I consider their report raises an important ethical issue, in that I regard their selection of references as subjective and arbitrary. In particular, the work of our group in revealing some major features of sodium homeostasis in premature infants has been ignored; for example, renal salt wasting, sodium depletion, and hyponatraemia, and the first introduction of NaCl supplementation in a dose of 3–5 mmol/kg/day to prevent sodium deprivation, to improve somatic stability, and to avoid untoward clinical consequences.ª

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Author’s reply
Methinks Professor Sulyok doth protest too much. His early, pioneering work on electrolyte balance in the newborn is well known, and extensively cited in an earlier review of the subject co-authored by myself. In this, inter alia, his study of the effect of salt supplementation on the renin-angiotensin-aldosterone system is quoted in support of the hypothesis that hyponatraemia in preterm infants is due to salt depletion rather than water retention. The reason these papers were not cited in the present paper is that they are not relevant to it. The paper is not a historical or general review of hyponatraemia in the newborn but the results of a study specifically designed to examine neurodevelopmental outcome in two particular groups of infants previously studied by ourselves. His recent study of hyponatraemia and sensorineural deafness in preterm infants had not been published when our paper was submitted to the Archives, although we would certainly have referred to it if it had been.

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We would like to apologise for an error that occurred in the paper Oxygen therapy for infants with chronic lung disease by S Kotecha and J Allen (Arch Dis Child Fetal Neonatal Ed 2002;87:F11–F14). The following sentence, under the heading Weaning from home oxygen, should have read: Vermeulen et al showed that infants who could be weaned from oxygen had median saturations of 97% during one hour awake studies, spent only 14% of time with saturation ≤ 95% and 2% of time ≤ 92%.

References