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 of neonates following oral vitamin K, Orakay, the preparation 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 the community midwife gave a second dose of Orakay by mouth. 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 28 day old term girl was thriving when her father administered a second dose of Orakay at home on formula milk, and therefore did not tolerate two doses of Orakay well. The baby coughed straight afterwards 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.

Case 3: a 28 day old term girl was thriving when her father administered a second dose of Orakay at home. She started to cough, became pale, unsettled, and remained very unsettled. Within an hour, she had tolerated two doses of Orakay well.

References

Table 1: Demographics of the two study groups and temperature difference

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<tr>
<td>Male:female</td>
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<td>3:7</td>
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<td>Mean gestation (wks)</td>
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<td>Mean gestational age</td>
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<td>-0.21°C</td>
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<tr>
<td>Temperature difference</td>
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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 recently carried out 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. Studies have shown that renal clearance is prolonged in premature infants because of renal immaturity. 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 be logistically feasible in some busy neonatal units, especially out of hours.

Reece et al were unable see the line tip clearly under direct vision, even after a contrast injection. 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 position of the long 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 Echoprobe-X-Cavo-Katheter (Vygon, UK) was inserted. This is the same catheter as that used by Reece and colleagues. Our placement aim was also similar to that in their study.

The position of the line tip on the posteroanterior radiograph was reviewed independently by an experienced junior doctor (IB) and a consultant neonatal radiologist (SB). There was agreement between the two investigators in 25/27 (92.6%) cases. No complications due to line placement were observed during the study period.

We therefore feel that a plain radiograph is the safest, quickest, and cheapest way to ensure the safety of the line.

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References

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

I 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 posturals that is, supine in their study and prone in our study.

HD Delligrammatics kdellogg@lyh.farthornet.com

References

Authors’ reply

We thank Professor Delligrammatics for his comments on our study.1 Delligrammatics et al hypothesised that the combination of the prone posture and the 45 degree head up position could facilitate diaphragmatic activity. We however, propose that the improvement in oxygenation seen in the head up tilt position was more likely to be due to a change in lung volume. In the head up tilt position, the weight of the abdominal contents on the diaphragm is reduced, leading to increase functional residual capacity. In contrast, ultrasonographic examination has demonstrated that the diaphragm was significantly thicker at end expiratory volume in the prone rather than the supine position, which is likely to result in reduced diaphragm strength. Indeed, we demonstrated Pimax (a measure of respiratory muscle strength) was lower in the prone compared to the supine position and the supine posture with 45° head tilt.

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sodium depletion, and hyponatraemia, ignored; for example, renal salt wasting, homoeostasis in premature infants has been revealing some major features of sodium otherwise. In particular, the work of our group in important ethical issue, in that I regard their mention our most recent findings describing a new aspect of the relation of neonatal sodium development of sensorineural hearing impair-

References

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 premature 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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References

CORRECTION
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 awake median saturations of 97% during one hour awake studies, spent only 14% of time with saturation < 95% and 2% of time ≤ 92%.