Intramuscular injection of propacetamol in a neonate

Neonatal paracetamol poisoning is rare and usually the result of maternal poisoning.1 Intramuscular injection of propacetamol in a neonate who received a high dose of propacetamol, and no data for the neonate. In our observation, the calculated half life was 3.5 hours, similar to that after intravenous injection.1 Given the slow decrease in plasma paracetamol concentration during the first eight hours, we suggest that, in neonates, after intramuscular injection of propacetamol, N-acetylparacetamol should be administered even if the early plasma paracetamol concentration is below toxicity level, and continued until the plasma paracetamol concentration reaches the therapeutic level (1–3 mg/l).2

Concentrations measured at eight, 12, 20, and 32 hours after the later injections showed a slow decrease (fig 1). The perfusion of N-acetylcysteine was continued at 100 mg/kg/24 hours for 22 hours until the plasma paracetamol concentration reached 3 mg/l. The liver enzymes and the coagulation profile remained normal during the hospital stay and seven days after discharge. No local complication at the injection site occurred besides induration. No adverse effect of N-acetylcysteine was noted.

There are very few data about intramuscular injection of propacetamol, and no data for the neonate. In our observation, the calculated half life was 3.5 hours, similar to that after intravenous injection.1 Given the slow decrease in plasma paracetamol concentration during the first eight hours, we suggest that, in neonates, after intramuscular injection of propacetamol, N-acetylparacetamol should be administered even if the early plasma paracetamol concentration is below toxicity level, and continued until the plasma paracetamol concentration reaches the therapeutic level (1–3 mg/l).2

References


Author’s reply

Dr Cartwright disagree with our recommendation1 to avoid right atrial central venous catheter tip placement based on 2000 catheters without tamponade. We agree that vigilant use of catheters (including radio-opaque dye to confirm placement), by experienced personnel aware of the potential risks, makes tamponade a rare complication, even when right atrial placement is used routinely. We have recently published a paper2 to increase awareness of the risk of tamponade and to warn against right atrial tip placement. In addition, for practitioners who continue to use right atrial placement, we wished to highlight the hitherto little publicised message that any line curvature within the atrium is unacceptable, because it denotes tip trapping in the myocardial wall and therefore a significant risk of tamponade. We are concerned that Dr Cartwright’s letter should go unchallenged, because unfortunately his experience is not as reassuring as it may at first seem. In addition, we wish to draw attention to a recent Department of Health Review of four neonatal deaths by cardiac tamponade related to central venous catheter use.3 One of the conclusions was that right atrial tip placement should be avoided.

A recent retrospective five-year survey in the United Kingdom has estimated a risk of
1.6 tamponades per 1000 neonatal percutaneous central venous catheter lines inserted, and that about 8000 such catheters are inserted annually in the United Kingdom. If we take the mortality of tamponade to be between 45% and 65%, then each year in the United Kingdom, six to eight neonates die because of tamponade related to central venous catheter placement. This value is likely to be a considerable underestimate because it is based on retrospective data, and cases may be missed if routine postmortem examination is not performed. Each of these deaths is preventable by avoiding right atrial tip placement. Although Dr Cartwright’s series indicates that in his practice the risk of tamponade is less than 0.5 per thousand lines inserted, he presumably would accept that some risk remains, as tip position cannot be monitored continuously, line migration is known to occur, and tamponade may occur within hours of tip trapping. Even careful radiographic monitoring with use of radiopaque dye will not reveal line curvature in the plane of the radiographs, and we and others who advocate dye would usually only inject it at the time of initial placement rather than on a regular basis.

The key question is whether this low risk of an often fatal complication of a common neonatal procedure is acceptable, when the risk can be reduced to zero by avoiding right atrial tip placement altogether. As Dr Cartwright points out, the cost of this risk reduction may be an increase in the risk of thrombosis and hydrothorax, but these complications are rare, and hardly ever fatal. They are surely negligible when balanced against the cost (in lives lost) of tamponade. We believe that the argument against right atrial tip placement is compelling. Ignore it at your patients’ peril.

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References
Placement of neonatal central venous catheter tips: is the right atrium so dangerous?

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Arch Dis Child Fetal Neonatal Ed 2002 87: F155-F156
doi: 10.1136/fn.87.2.F155-a