PostScript

LETTERS

Pain relief during common neonatal procedures: a survey

We conducted a survey of neonatal pain relief practices for common procedures across the United Kingdom as a baseline for improving our own practice, and we here present the results.

We sent a questionnaire to all Scottish hospitals, and units from the rest of the United Kingdom if they had 40 or more maternity beds (n = 96);[1] the response rate was 85%. Analgesia was used in 82% of units for elective intubation, the commonest agent used being morphine (79%), followed by fentanyl. Analgesia was also used in 11% of the units for intravenous cannulation and in 10% for heelpricks. The analgesia most commonly used for cannulation was sucrose or dextrose. Some 5% of units stated that they used morphine for radial arterial lines but these infants were already ventilated and receiving morphine.

These data appear to give a snapshot of current practice, but we cannot know how far unit guidelines translated into the actual experience of the babies. As pain in the neonatal period has immediate and long term consequences,[1 2] and preterm infants may be exposed to many painful procedures during their hospital stay, there is some way to go before we can claim that neonates are getting optimum pain control.[1 2] The wider use of sucrose and topical anaesthetics (if safety concerns can be adequately addressed) seem likely to be the quickest routes to improving the situation.

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US bioethics fall short of world standards

In their study of motion resistant pulse oximetry in neonates, Sahni *et al*[1] obtained approval from their institutional review board and consent from the parents of the infants involved. Nevertheless, the study fails the most basic principles of bioethics, and this calls into question the value of institutional review boards and points to a yawning chasm between American ethical practices and world ethical standards.

The recognised criteria for ethical experimentation are the Nuremberg Code (1947)[2] and the Declaration of Helsinki (1964) as amended.[3] The Nuremberg Code requires the consent of the subject, which obviously could not be obtained in this case. The Declaration of Helsinki provides for the consent of the legal representatives of minor children in certain limited instances:

> ''For a research subject who is legally incompetent, physically or mentally incapable of giving consent or is a legally incompetent minor, the investigator must obtain informed consent from the legally authorized representative in accordance with applicable law. These groups should not be included in research unless the research is necessary to promote the health of the population represented and this research cannot instead be performed on legally competent persons.''[3]

This provision is inapplicable in this instance because this research did not promote the health of the population group represented and because this research easily could have been performed on legally competent adults.

Male neonatal non-therapeutic circumcision violates basic human rights to security of the person and to freedom from torture, inhuman, or degrading procedures. A recent study found that neonatal circumcision fails all ethical tests.[4] Moreover, the Norwegian Council for Medical Ethics advised the Norwegian Medical Association that the circumcision of boys is not consistent with important principles of medical ethics, has no established medical benefit, and causes pain even with the use of local anaesthesia.[5] Non-therapeutic circumcision of children violates articles 1, 2, and 20 of the *European Convention on Human Rights and Biomedicine*.[6]

The institutional review board must be more than a rubber stamp to approve whatever is proposed. Clearly, world ethical standards were not considered in this instance. It is time for American bioethics boards and committees to adopt world standards.

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6 *European Convention on Human Rights and Biomedicine* (1997). Adopted at Oviedo, 4 April 1997. Available at: http://conventions.coe.int/Treaty/en/Treaties/Html/164.htm.

Time is of the essence

Accurate time keeping is of great import in all resuscitation settings and none more so than in the medicolegal minefield of perinatology. Recent cases have shown accurate documentation is of vital importance, especially the recording of times. Two studies have delineated considerable discrepancies in clock times in patient care settings[1 2]; these may exacerbate any medicolegal issues. A prospective observational study assessed clock accuracy in paediatric and neonatal resuscitation areas in a hospital with three sites, separated by up to 18 miles. Senior paediatric cover was provided by one middle grade and one consultant, making accuracy of timing extremely important. The accuracy of the consultants' watches was prospectively assessed without warning.

A total of 39 clock times were taken and compared with the true time as per the speaking clock. In total, the mean (SD) difference was −11 (40) seconds. The labour suite clocks had a mean of +6 (20) seconds. The neonatal unit clocks had a mean of −109 (107) seconds. When paediatric resuscitation areas throughout the Trust were compared, the mean was +18 (43) seconds. The consultants' watches had a mean of +8 (54) seconds.

In the maternity hospital, the labour suite clocks have been changed to ''satellite controlled'' ones costing five pounds ninety nine pence. This has resulted in their close correlation, with obvious medicolegal benefits. The other clinical areas studied did not have this technology in place, but the results are considerably better than in previous studies. The accuracy of the consultants' watches was exceptional, as no warning was given. This is a reminder to all to document times accurately and evidence enough that resuscitation areas in hospitals should use modern technology and have a centrally controlled time system to avoid needless errors in annotation. We leave you to take your own time to decide.

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Atrial flutter in preterm babies

Atrial flutter is uncommon in neonates without congenital heart disease or cardiac surgery. It forms about 3% of cardiac arrhythmias in the newborn.[1] Although idiopathic atrial flutter can occur in the fetus,[2 3] accounting for 30% of fetal arrhythmias in one series,[4] spontaneous conversion often occurs during birth. I share our experience of two preterm babies who had atrial flutter associated with maternal opiate abuse. There are no previous case reports on this association.

The first case was of a 27 week gestation baby born to a mother with mild cerebral palsy who was abusing drugs such as heroin, crack cocaine, and alcohol and was on a methadone programme during pregnancy. The baby was ventilated from birth for hyaline membrane disease. He had withdrawal symptoms from day 2 in spite of a maintenance infusion of diamorphine, which was then gradually increased. On day 3, he suddenly developed one brief narrow complex tachycardia followed by a similar persistent tachycardia. This was initially diagnosed as supraventricular tachycardia, and he received appropriate treatment with no effect. On review by a cardiologist, atrial flutter was confirmed. Echocardiography ruled out any structural heart disease. The atrial flutter lasted for seven hours. The heart finally reverted to a sinus rhythm with a second dose of digoxin. The baby continued to receive a maintenance dose of digoxin. There was no recurrence of the atrial flutter.

The second case is of a 28 week preterm baby born to a mother who was a heroin addict and was on a methadone programme during the last trimester of pregnancy. The baby developed hyaline membrane disease and was initially managed with head box oxygen and then nasal continuous positive airways pressure. From day 2 he needed ventilation (with diamorphine maintenance). He developed withdrawal symptoms and, later, two episodes of atrial flutter (fig 1).

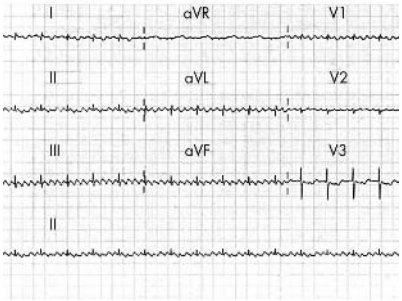

Figure 1 Electrocardiogram showing classical saw toothed flutter waves.

Diamorphine was increased to control the withdrawal symptoms. He spontaneously reverted to sinus rhythm and had no further episodes of atrial flutter. No structural heart disease was found on echocardiography.

These episodes of atrial flutter clearly happened in conjunction with other symptoms of opiate withdrawal. Sympathetic excitation is known to occur during opiate withdrawal. We do not know if this predisposes preterm babies, in whom atrial excitation occurs more readily, to this type of arrhythmia. Until we have further case reports, we will not be certain about this association, and the occurrence of this arrhythmia in these cases may be coincidental. However, we know that this type of arrhythmia, if persistent, can be serious, and immediate treatment will be life saving. Hence preterm babies should be monitored closely during opiate withdrawal.

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Is mesenteric blood flow compromised during phototherapy in preterm neonates?

We have previously reported that abdominal distension, visible ''ropy'' bowel loops, and bile stained gastric aspirates (manifestations of ileus) without loose watery stools are more often observed in preterm neonates having conventional phototherapy (CPT) than in those not having this treatment.[1] Reported changes in the mesenteric blood flow as well as peripheral blood flow and cardiac output during CPT indicate that mesenteric ischaemia may occur during CPT in preterm neonates.[2–4] We hypothesised that mesenteric blood flow may be compromised during CPT in preterm neonates who are not being fed. If our hypothesis was true, mesenteric ischaemia may explain ileus during CPT in preterm neonates.

In a prospective observational study, superior mesenteric artery blood flow (maximum, minimum) velocity and resistive index (RI) were measured by ultrasound pulsed Doppler in 14 consecutive preterm neonates before and 8–12 hours after the start of CPT. At the time of the study, they did not have associated common risk factors for ileus such as patent ductus arteriosus, indomethacin, sepsis, electrolyte imbalance, and enteral feeds. Their ventilatory/oxygen needs were minimal, and cardiovascular support was not required. The birth weight, gestational age, and postnatal age of the enrolled neonates were 885–1410 g, 27–29 weeks, and 2–4 days respectively. The mean (SD) maximum velocity (VMAX) and RI before and after the start of CPT were not significantly different: VMAX, 0.41 (0.13) *v* 0.50 (0.11) m/s ($p = 0.10$); RI, 0.73 (0.08) *v* 0.70 (0.08) ($p = 0.10$). Minimum velocity after CPT was, however, significantly increased: 0.06 (0.04) *v* 0.16 (0.05) m/s ($p < 0.001$). Ileus developed 4.8 (2.1) days after the initiation of CPT in 8/14 neonates despite the absence of the risk factors studied.

Increased superior mesenteric artery end diastolic blood flow velocity may indicate photorelaxation of the mesenteric vascular smooth muscle during CPT.[5] CPT per se may be a risk factor for ileus in preterm neonates.

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CORRECTION

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J C Becher, J E Bell, J W Keeling, *et al*. The Scottish perinatal neuropathology study: clinicopathological correlation in early neonatal deaths (*Arch Dis Child Fetal Neonatal Ed* 2003;**89**:F399–407). In Table 4, the second row, last column heading was published incorrectly and should read: NoBA group (n = 13; 22%). We apologise for this error.

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