

NALOXONE (Commentary)**Safety**

Guidelines on neonatal resuscitation in the UK and in the USA have long stressed the danger of giving naloxone to the baby of any mother who has been abusing opiates during pregnancy. As justification all quote the same single brief case report of fits in a newborn baby that was attributed to this cause by Gibbs *et al.* in 1989. However this remains, after twenty years, the *only* published report of such a complication and, since no other case has ever been reported to the UK licensing authorities, such problems are clearly very uncommon. Fits are reported to have started 2 minutes after an asphyxiated term baby received a 200 micrograms IM dose of naloxone shortly after birth, and to have stopped thirty minutes later just as soon as a 100 microgram/kg bolus of IV morphine was given.

While there are several published case series suggesting that seizures are not infrequently seen in babies who shows symptoms of withdrawal following delivery by an opiate-dependent mother (AAP, 1998), this has not been the experience of those centres with the most extensive recent experience of managing such patients in the UK. Fits are also extremely uncommon in women undergoing opioid detoxification. Benzodiazepines are the only drugs of abuse where there is good documentary evidence of abrupt withdrawal precipitating seizures. Even here such problems are much commoner in mothers than in babies. It is possible, therefore, that the fits mentioned in some of the early published reports may have been caused by the abusive use of more than one drug.

There is, on the other hand, good evidence that, while the abrupt termination of regular self-administration is not unduly hazardous, precipitate reversal with an opioid antagonist (such as naloxone) *can* occasionally cause serious maternal and fetal distress. Similarly, there are a few unpublished anecdotal reports of inadvertent naloxone administration making a drowsy baby, in whom the link to maternal opiate use had gone unrecognised, extremely unwell. Against this, in one report into the care of 74 such women, 4 babies were given a 10 microgram/kg IV dose of naloxone to counteract neonatal respiratory depression without any apparent adverse effect (Maas *et al.*, 1990). Much more commonly opiate exposure during labour causes a degree of neonatal sedation that interferes with the early establishment of lactation (Jordan *et al.*, 2005).

There is just one report of naloxone causing unexpected abrupt cardiac arrest in a ventilated very preterm baby who had been given a 10-fold overdose of morphine (Deshpande and Gill, 2009). That this is the first such report for a drug that has now been in common use for thirty years must leave readers wondering whether the event was actually caused by the drug or, perhaps, by something very different, such as an episode of transient unrecognized air embolism.

In summary, while it seems that deliberate high dose administration may, very rarely, provoke unpleasant symptoms in the baby of an opiate abusing mother, there is no published evidence of inadvertent administration causing lasting harm.

Intravenous administration

The American Academy of Pediatrics recommends a 100 microgram/kg dose (a dose ten times larger than the dose recommended by the manufacturer), citing good evidence to show that this dose is safe. However, the Academy has also long recommended that, if naloxone is needed during neonatal resuscitation, it is best given into a vein or into the trachea (AAP, 1990). This gives a totally false impression as to the urgency with which excessive sedation requires reversing once respiration has been controlled and, because of the half life of naloxone is only 2–3 hours when given IV, such a strategy will only briefly counteract the depressive effect of the opiates to which the baby has been exposed during delivery. This *Formulary* has, therefore, always recommended IM treatment when it does seem appropriate to counteract opiate depression after primary resuscitation has been achieved.

References

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