

Paediatric methadone ingestions: An under-recognized form of child maltreatment?

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Emergency medical services received a telephone call from a mother reporting that her three-month-old daughter “turned blue and then stopped breathing” after a prolonged period of crying. On arrival, paramedics found an infant making minimal respiratory efforts with a heart rate of 100 beats/min. Bag-mask ventilation was initiated on the scene. During transport to hospital, she had no spontaneous respiratory effort. Endotracheal intubation was performed and the infant was admitted to the intensive care unit. On admission, pH was 6.84, pCO₂ 102 mmHg, and serum lactate 28 mmol/L. Chest radiography demonstrated moderate pulmonary edema.

Her medical record revealed a two-week stay in the intensive care unit following birth for treatment of neonatal abstinence syndrome because her mother had a history of prescription opioid abuse and had been enrolled in a methadone maintenance treatment (MMT) program throughout pregnancy. The baby had been treated with oral morphine and formula feeding was initiated because the mother did not wish to breastfeed.

A urine toxicology screen for methadone was collected from the infant 30 min after admission. The result was positive and a naloxone infusion was initiated. Despite aggressive ventilator and hemodynamic support, she developed fixed, dilated pupils 8 h later and was eventually declared brain dead.

A report was made to child welfare authorities because of the positive toxicology screen and the death was reported to the medical examiner, who initiated an inquiry. During investigations, the mother, who was taking 120 mg/day of methadone and had ‘carry privileges’, admitted to adding “a little bit” of methadone to her daughter’s formula on three or four occasions of extreme fussiness, because it “helped her to relax”. Autopsy revealed significant cerebral and pulmonary congestion and edema, and no evidence of previous or recent trauma. Analysis of material collected at autopsy confirmed the presence of methadone. The methadone intoxication diagnosis was noted on the death certificate.

LEARNING POINTS

- Methadone is a long-acting synthetic opioid agonist, widely used in the treatment of opioid dependency within MMT programs to prevent withdrawal symptoms and reduce opioid cravings. Methadone may be prescribed for chronic pain and may also be abused illicitly (1).
- Within MMT programs, carry-home doses may be dispensed in juice/juice-like solutions (to improve taste and prevent illicit injection). Oral solutions must be stored in the refrigerator; they may be appealing to young children or easily added to infant formula.

- If ingested by children, methadone is potentially lethal even in a small dose (0.5 mg/kg) (2). Amounts present in the home may be greater than that necessary to produce fatal toxicity in infants and children: therapeutic analgesic adult doses are 5 mg to 20 mg; doses for MMT programs are 50 mg to 120 mg.
- Cases reports of paediatric methadone ingestion have been published since the late 1960s (3). The number of ingestions has increased over time as MMT programs have gained popularity, prescribing policies have liberalized and the clinical uses for methadone have expanded.
- Between 2000 and 2008, the American Association of Poison Control Centers reported 2186 methadone exposures in children <6 years of age, including 20 deaths (4).
- Paediatric exposures to methadone have occurred both accidentally (due to children accessing caregivers’ methadone doses [5,6]) and intentionally (due to administration by a caregiver in an effort to sedate a child and quiet a crying baby [7-9]).
- Paediatric methadone ingestion may be an under-recognized form of child maltreatment. In a 2011 CPSP one-time survey on paediatric methadone exposure, only slightly more than one-half of respondents who had seen an ingestion case indicated that a report to a child welfare authority was made (10).
- Paediatric ingestions of prescription and over-the-counter medications are entirely preventable. Paediatricians should play an active role in prevention by counselling families about the dangers of medication ingestions and the necessity of safe storage of medications (11).

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