



K37 Methamphetamine in Fetal and Infant Deaths in Washington State

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By attending this presentation the participant will learn about methamphetamine exposure in infants and children, and will receive guidance on how to interpret quantitative toxicological data.

Methamphetamine is a commonly abused drug in Washington State and positive methamphetamine findings in infant and fetal deaths have been increasing in recent years. Pediatric toxicology merits careful consideration, and caution in interpretation. Children cannot be treated as "small adults". Methamphetamine death in adults has been attributed to methamphetamine levels as low as 0.05 mg/L, however, this is usually in combination with other drugs or underlying disease. Pediatric methamphetamine poisonings are generally non-fatal, and amphetamine has been successfully administered to young children to treat hyperactivity disorders without adverse effects.

Several in utero deaths associated with maternal methamphetamine use have been reported but the significance of the methamphetamine concentration in these cases is often unclear, and can be controversial. In 1994, a California woman was convicted of child endangerment following the death of her two-month old infant son because she ingested methamphetamine and breast-fed her infant.

The authors reviewed fourteen cases of fetal and infant deaths with methamphetamine positive findings in autopsy blood, believed to be related to maternal methamphetamine use. Blood samples from the child or fetus was subjected to comprehensive toxicological screening including immunoassay and GC/GCMS analysis of both basic and weakly acidic fractions. Methamphetamine was detected in the basic fraction, following extraction with butyl chloride. The LOD for both methamphetamine and amphetamine was 0.02 mg/L, and limits of linearity were 0.02 - 10 mg/L for methamphetamine, and 0.02 - 5.0 mg/L for amphetamine.

The age of the infant and fetal deaths ranged from 22 weeks gestation, to 5 months old. 64% of the cases were stillbirths. The mean blood methamphetamine concentration in these pediatric death investigation cases was 0.24 mg/L (median, 0.18mg/L; range 0.04 - 0.59 mg/L) and mean amphetamine concentration was 0.07 mg/L (median, 0.06mg/L; range 0.02 - 0.16 mg/L).

A representative case was that of the death of an 8-week-old infant, found to have 0.04 mg/L methamphetamine, and < 0.01 mg/L amphetamine. The circumstances of this death were consistent with SIDS, and the family had a number of risk factors for SIDS (baby asleep on front, elevated temperature, history of child neglect, drug and alcohol use by the mother). While the methamphetamine was not clearly a cause of death in this case, it did however make SIDS (a diagnosis of exclusion) an inappropriate finding and the death was classified as undetermined in both cause and manner. No criminal charges were filed in this case. Charges were however filed in at least one other case.

As drug and chemical exposure of children in drug houses where methamphetamine is manufactured becomes an increasing concern, the authors also report the urine toxicological findings of two children exposed to methamphetamine. One 8-year-old was removed from a clandestine methamphetamine laboratory and had 0.04 mg/L methamphetamine and 0.02 mg/L amphetamine in his urine. The second child, a 1-year-old, was presented at an emergency room with signs of methamphetamine toxicity. His urine toxicology was positive for methamphetamine (15 mg/L) and amphetamine (0.9 mg/L).

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