

PEDIATRICS

Melamine ingestion and prematurity associated with urolithiasis

Infants fed milk products contaminated with high concentrations of the industrial chemical melamine are seven times more likely to develop urinary stones than unexposed children. Preterm birth exacerbates this risk.

A free screening program was initiated late last year in China, after a drastic increase in the reported incidence of urolithiasis was linked to ingestion of adulterated powdered formula. Of 589 children aged 3 years or younger who presented to Peking University First Hospital, 421 had been fed tainted formula for at least 30 days. The presence of stones—mostly small and sand-like, and confined to the renal pelvis—was confirmed by ultrasonography in 50 infants; another 112 had suspected stones. Importantly, urinalysis generated only non-specific findings, and most of the affected children were symptom-free.

The relationship between ingestion of high levels of melamine and urolithiasis was confirmed during ultrasonographic screening of 15,577 children in Hangzhou province. Again, calculi were found to be small. Treatment with sodium bicarbonate and traditional Chinese medicine on an outpatient basis was successful in 91% of affected infants.



The lack of stone-specific symptoms such as oliguria, edema, distress during urination and passing of calculi among affected children indicates that investigation for urolithiasis should be based on history of melamine exposure rather than on symptomatology. Ultrasound examination of exposed infants should be performed, with operators being cognizant of the fact that melamine-associated stones often do not show the shadowing that is typical of urinary calculi.

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Original articles Guan, N. *et al.* Melamine-contaminated powdered formula and urolithiasis in young children.

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