

Is melamine contamination an issue in Canada?

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A Chinese family immigrated to Canada in early 2008. One week after their arrival, the parents brought their nine-month-old son to the emergency department because of fever and unexplained crying. He refused solids, drank small amounts of a commercial iron-fortified formula and had few episodes of vomiting without diarrhea. His parents noticed that his urine was darker than normal with a strong smell, without macroscopic hematuria.

On physical examination, the infant was feverish but not toxic, and crying with slight pallor. He was not clinically dehydrated, and his blood pressure was 90/60 mmHg. The physician elicited suprapubic and left flank pain on palpation and questioned the possibility of a urinary tract infection. The laboratory test results revealed a white blood cell count of $9.0 \times 10^9/L$ and a hemoglobin level of 95 g/L, and urinalysis revealed pyuria and microscopic hematuria. The child also had hypercalciuria. The urine culture obtained by catheterization confirmed an *Escherichia coli* infection; his blood culture was negative. The abdominal ultrasound revealed a left hydronephrosis, and a plain radiograph of the abdomen confirmed the presence of a radiopaque renal stone at the pelviureteric junction.

The parents were concerned and asked whether their son's disease could be related to the outbreak of kidney disease stemming from melamine-contaminated milk in China.

LEARNING POINTS

- In late 2008, the United States Food and Drug Administration and the World Health Organization reported an outbreak of renal stones and/or acute renal failure occurring in very young children in China, which was associated with the consumption of powdered milk products contaminated with melamine, and that led to a few deaths.
- Public interest rose when other dairy products, such as frozen yogurts, chocolate cookies and toffee candies, made in China and exported to other areas such as Australia, Europe, the United States and Canada, were found to contain melamine.
- Infant formula manufactured in China is not approved for sale in Canada. Health Canada also confirmed with the four major manufacturers of infant formula sold in Canada that they do not use any milk ingredients that come from China <www.hc-sc.gc.ca/fn-an/securit/chem-chim/melamine/qa-melamine-qr-eng.php>.
- In light of this public health priority and to obtain national epidemiological data, the Public Health Agency of Canada commissioned the Canadian Paediatric Surveillance Program (CPSP), in October 2008, to conduct an emergency survey to assess whether any presentations of renal stones and/or acute renal failure in Canadian children may have been caused by a melamine outbreak. The CPSP survey was issued within 10 days to 2475 actively practicing paediatricians and paediatric subspecialists.
- The response rate was 47%. Fortunately, no cases of melamine-associated renal diseases were reported. Of the 1153 respondents, 12 cases of renal stones were reported and one of these also had acute renal failure, all presenting in the previous 12 months. The main causes identified so far are urinary tract infections, hydronephrosis and hypercalciuria. Interestingly, nearly 10% of respondents mentioned that parental concerns were voiced to them, especially from those who worked in international adoption clinics.
- Parents of the clinical vignette were reassured that their son's renal stone and urinary tract infection were not related to melamine contamination, because his renal stone was radiopaque in the presence of hypercalciuria, and he did not have any exposure to powdered milk and other milk products from China.
- A list of products with melamine levels higher than interim standards is accessible at <www.inspection.gc.ca/english/fssa/concen/2008melinfoe.shtml>.
- The CPSP emergency-response preparedness exemplifies the excellent added value of investing in a national network of active surveillance, well connected with front-line paediatricians and public health officials.

The Canadian Paediatric Surveillance Program (CPSP) is a joint project of the Canadian Paediatric Society and the Public Health Agency of Canada, which undertakes the surveillance of rare diseases and conditions in children and youth. For more information, visit our Web site at <www.cps.ca/cpsp>.

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