

Lead exposure by accidental ingestion

Plenert B (1), Adler R (2), Kutz S (1), Bergmann I (1), Hentschel H

(1) Poison Information Centre, Erfurt, Germany

(2) Municipal Hospital, Dresden-Neustadt, Germany

Objective: The toxicologic impact of ingested metallic lead is low, but an increased absorption of lead in children is described (1).

Case report: Two children (6-year-old girl, 8-year-old boy) without symptoms were presented on 30 May 2009 because they had eaten lead beads from a bag for joint-bedding (Fig.1). The PIC Erfurt recommended an abdominal X-ray after 48 hours and further measures in dependence of its result. The radiography on the next day showed beads in the small and large intestine (Fig. 2 and 3) and were still visible after 5 days in the boy. The lead blood levels increased to 275 µg/L in the boy and 230 µg/L in the girl (Tab. 1 and 2), respectively. Both lead blood levels were above the Human Biomonitoring levels of HBM I (100 µg/L) or HBM II (150 µg/L), respectively (2). The oral treatment with 2,3-dimercaptopropane-1-sulfonate (DMPS) was in-patiently started for the first days. Afterwards, the DMPS treatment was continued out-patiently and well tolerated. However, after 17 days, the administration of DMPS was interrupted because of coxsackie virus infection in both children. At that time, the lead blood levels were already decreased considerably (Tab. 2 and 3). Furthermore, the lead beads were not seen radiologically any more and the children remained free of symptoms of lead poisoning at all the time of monitoring.



Fig. 1
Lead beads from the same bag for comparison to poppy seeds on a roll



8-year-old boy

Fig. 2
Abdominal X-ray
one day after ingestion

Tab. 1 Lead concentration of the boy

Date	Blood	Urine
2009/06/08:	275 µg/L	44.3 µg/L
2009/06/15:	247 µg/L	
2009/06/23:	156 µg/L	
2009/06/30:	146 µg/L	
2009/07/06:	102 µg/L	
2009/07/14:	147 µg/L	
2009/08 :	120 µg/L	14.1 µg/L



6-year-old girl

Fig. 3
Abdominal X-ray
one day after ingestion

Conclusions

The ingestion of small lead particles by children can due to a relevant rise of the lead blood level. The passage through the bowel can be delayed and should be controlled radiologically (3). The treatment with an chelating agent should be considered.

References:

1. Kosnett MJ. Lead. In: Olson KR ed. Poisoning and Drug Overdose. 5th ed. Lange Medical Books/McGraw-Hill New York, USA: 2007: 237-242.
2. Kommission „Human-Biomonitoring“ des Umweltbundesamtes. Stoffmonographie Blei; Referenz- und Human-Biomonitoring-Werte (HBM). Bundesgesundheitsblatt 1996; 39: 236-241.
3. Aks SE, Harris V. Radiologic Findings, In: Erickson TB, Ahrens WR, Aks SE, Baum CR, Ling LJ eds. Pediatric Toxicology. 1st ed. Medical Books/McGraw-Hill New York, USA: 2005: 188-196.

Tab. 2 Lead concentration of the girl

Date	Blood	Urine
2009/06/08	230 µg/L	65.4 µg/L
2009/06/15:	186 µg/L	
2009/06/23:	110 µg/L	
2009/06/30:	66 µg/L	
2009/07/06:	61 µg/L	
2009/07/14:	69 µg/L	
2009/08 :	65 µg/L	1.1 µg/L