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Lead Poisoning from Occupational and Environmental Exposure

Thanjira Jiranantakan[1,2]

[1]*Department of Preventive and Social Medicine, Faculty of Medicine Siriraj Hospital, Mahidol University*

[2]*Siriraj Poison Control Center, Siriraj Hospital, Thailand*

Objective: To review case studies of lead poisoning in families with young children, where the parents are exposed to metal smelting industrial activities in their workplace.

Methods: A retrospective review of two, unrelated pediatric patients suffering lead poisoning was undertaken. Each case of lead poisoning arose from exposure through their parents' occupations.

Results: The first case was a 2-year-old boy who displayed congenital heart disease with delayed development. His highest blood lead level was 77.02 mcg/dL. His mother, who worked in an ornament factory, displayed a blood level of 53.34 mcg/dL. The mother took her son with her to work. The factory was a 2-storey-building employing some 200 workers, or so. The mother worked in an area where metal smelting took place. The patient's father, who did not work at the factory, had blood lead level of 10.82 mcg/dL. The patient was admitted for chelation by dimercaprol (3 days) and CaNa2EDTA (5 days). The patient's lead level before being discharged was 9.87 mcg/dL. The patient was sent to his grandmother's while his mother continued working at the same factory, despite the known adverse effects of lead poisoning. The Public Health Authority was notified in order to investigate the work conditions at the factory.

The second case was an 11-year-old boy who displayed anemia, and was diagnosed with thalassemia. His parents ran a family business casting Buddha statues, which involved metal smelting. Blood lead levels of the patient, his mother and father were 10.89, 6.71 and 6.35 mcg/dL respectively. The metal smelting took place at an outdoor location immediately adjacent to the family house. The business employed 20 workers. Although the metal smelting was performed outdoors, the boy's parents would typically stir the smelting liquid by hand, while not wearing any respiratory protection equipment. Following review of the case, ventilation was improved, and the wearing of personal protective equipment was mandated. The boy, his mother and father have undergone regular medical check ups over a 4-year period since the initial blood lead readings. Their blood lead levels during a recent visit were 5.6, 5.2 and 5.4 mcg/dL respectively. Chelation therapy was not performed. All other workers declined medical attention and blood lead level testing, despite the owners' offer of financial support.

Conclusion: Children may be exposed to lead poisoning through their parents' work. Management and preventive measures should be considered based on clinical manifestations, blood lead levels and work practices.