

## Case Reports

# Childhood lead poisoning

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### Introduction

Lead is a natural element and does not break down in the environment. Once it has been disposed and deposited in the environment, it will remain and poison generations of children unless it is controlled or removed. Lead in the human body is unnatural, and reflects contamination of the internal milieu.

Children may develop lead poisoning by ingesting lead containing paint, dust etc. or following inhalation of lead fumes from smelters. Though lead poisoning has not been documented much in Sri Lanka, this case highlights that it is an important differential diagnosis in children.

### Case Report

A 09-month-old Muslim girl from a poor socio-economic background from Weligama was referred to us with repeated bouts of effortless vomiting for 01 month and low grade fever of 02 days duration. She has been anorexic but not been constipated. 24 hours after admission she developed repeated uncontrolled generalized and focal convulsions.

She is the 6<sup>th</sup> child born at term to a healthy mother and weighed 2.58kg at birth. All other siblings are alive and well. Her Child Health Development Record showed that there is significant failure to thrive, but this had not been investigated. Developmental milestones were appropriate for her age.

On admission, her temperature was 38 degrees Celsius and she weighed 6.0kg (below the 3<sup>rd</sup> centile). She was drowsy with no other neurological signs and was severely pale. There was no splenomegaly. Her haemoglobin level was 6.5 grams/dl with a serum ferritin of 280.00 ng/ml (normal range 8.0-140.00). Reticulocyte count was

4%. Total white cell count and differential count was normal. Her peripheral blood film was hypochromic with polychromatic cells. Urine analysis did not reveal proteinuria or glycosuria and urine culture was sterile. Blood urea was normal.

Cerebrospinal Fluid proteins were raised with normal cell counts. CT scan of brain excluded a possible space-occupying lesion.

Clinical presentation, along with the peripheral blood film appearance raised the possibility of lead encephalopathy which was further supported by the presence of dense lines in distal ends of long bones (Figure.1). X ray of abdomen did not reveal any lead particles. Serum lead levels of 150 micrograms/dl confirmed the diagnosis.

Though the mother initially denied any possible lead exposure, on subsequent questioning, she revealed that her family is involved in lead smelting over the last 7 months. The child was treated with sodium calcium edetate and dimercaprol. Her anaemia was corrected with a blood transfusion and fits were brought under control with anticonvulsants. On discharge from the ward she was well and there was no evidence of residual brain damage.

### Discussion

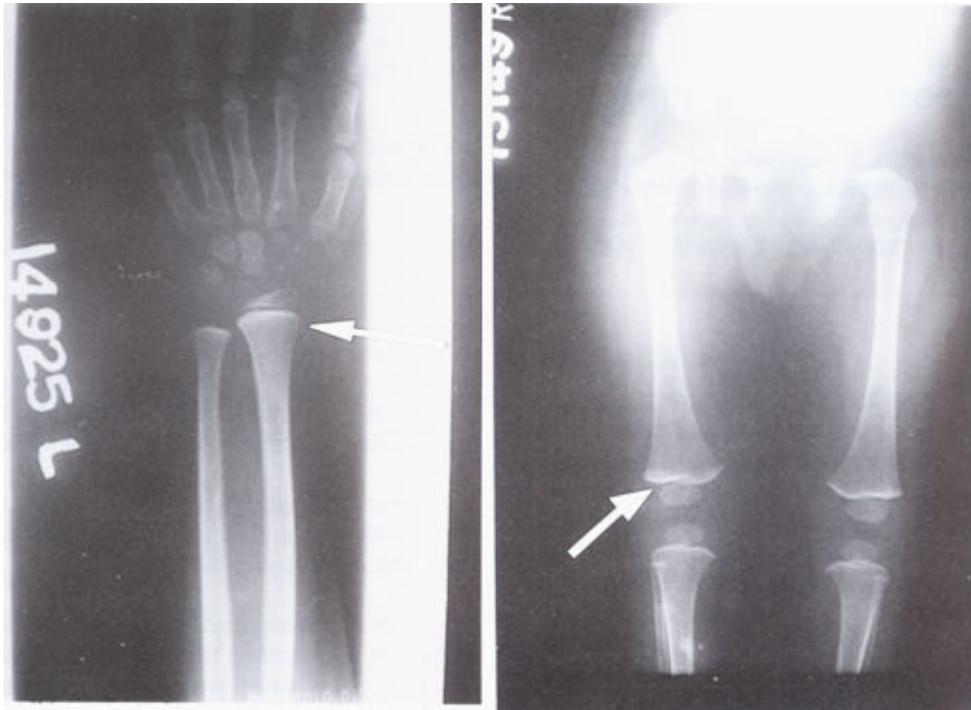
In developed countries, lead poisoning has declined dramatically due to limits on lead in gasoline, paint, food cans and other consumer products. In Sri Lanka in the absence of a properly implemented Clean Air Act, lead poisoning is still an important health problem though it is not highlighted.

Lead affects practically all systems within the body and is most harmful to children under 6 years of age as lead is easily absorbed in to their growing bodies and interferes with the developing brain and other organs. Pregnant women and women of child bearing age are also at risk because lead ingested by the mother can cross the placenta and affect the unborn fetus. Children with chronic low level exposure with

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a blood level as low as 10 micrograms /dl may develop intellectual and behavioral problems such as hyperactivity, impaired reading and learning disabilities. Vomiting, impaired growth abdominal

pain and motor neuropathy are other known manifestations of chronic exposure. A very high level of lead exposure can cause mental retardation, coma, convulsions and even death.



**Figure 1** X-ray of long bones showing dense lead lines

Our child who has had vomiting with failure to thrive presented with lead encephalopathy. Severe anaemia observed is a known complication and it is as a result of haemolysis and ineffective erythropoiesis. Renal tubular dysfunction, intellectual and behavioural effects were not seen in this child. X rays of long bones show dense lines in the metaphysis due to dense zones of calcium following impaired skeletal growth.

Subsequently, on a visit to their house, we were able to gather interesting information. Her family including her 13 years old brother has been smelting lead from motor vehicle batteries inside their living room, for production of lead weight for fishing rods. This was their main occupation. Living area floor was highly contaminated with lead particles as result of their work. This 9-month-old crawling on the contaminated area probably has been directly ingesting it.

Inhalation is very unlikely to be the mode of poisoning, as temperature reached in this process is insufficient for evaporation. 2 brothers who are actively engaged in this process were screened and found a blood lead level of 25 micrograms /dl and were advised to be away from further exposure.

### Conclusion

This case highlights that the fact lead is still a health hazard in Sri Lanka and it is important to consider lead poisoning as a differential diagnosis in children with a similar presentation. It is vital to introduce stern legal measures to limit lead in consumer products.

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### References

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