

Lead poisoning from Ayurvedic medicines

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Abstract

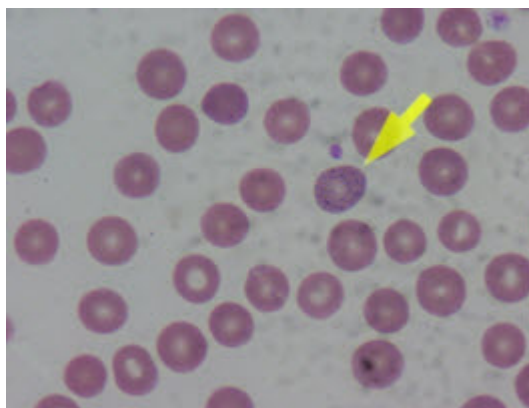
A case of lead poisoning with established exposure to Ayurvedic medicines is presented. This patient migrated from India to New Zealand 8 years previously. He regularly visits India where he purchases “herbal remedies” for his wellbeing.

Case report

A 40-year-old Asian Indian male presented with 2 months of lethargy, malaise, myalgia and arthralgia. His spouse had noted pallor, intermittent memory loss and personality changes as well. Medical background included diabetes (on metformin and gliclazide), hypertension (on cilazapril, atenolol, and indapamide), dyslipidaemia (diet controlled), gout (on allopurinol) and oesophageal reflux (on omeprazole).

Blood tests revealed anaemia (97 g/L from 147 g/L a year ago). Liver function tests were within normal range. The blood film showed basophilic stippling (Figure 1).

Figure 1. Basophilic stippling seen within the red blood cell



Whole blood level was 3.5 $\mu\text{mol/L}$ (0.0–0.47) and thus was referred to our hospital for further management. Examination findings included a “lead line” on his gums (Figure 2). There were no neurological findings.

Figure 2. “Lead line” – blue pigmentation seen along the gum line



He had no occupational or domestic exposure to lead. Three Ayurvedic medicines were suspected to be the cause.¹ These were sent to Environmental Laboratory Services Ltd for analysis and elevated lead levels were found. The patient recalled taking these tablets consistently for the past 8 years, which equated to approximate cumulative exposure of 166 mg (56.8 mcg/day) (Table 1).

Table 1. Environmental Laboratory Services report with daily exposure dose

Variables	Himalaya Liv 52 DS	Neem Guard	Jambrulin
Lead content	2.7 mg/kg	4.4 mg/kg	14.8 mg/kg
Tablet weight	0.6812 g	0.5918 g	0.5392 g
Dose	2 tab daily	2 tab daily	6 tab daily
Exposure	3.7 mcg / day	5.2 mcg / day	47.9 mcg / day

He was treated with dimercaptosuccinic acid (DMSA) for 19 days due to his symptoms. Lead levels decreased from 3.4 $\mu\text{mol/L}$ to 1.9 $\mu\text{mol/L}$ at 29 days. The haemoglobin improved from 94 g/l to 120 g/l at day 31 as did his symptoms.

Discussion

A blood lead level of greater than 0.48 $\mu\text{mol/L}$ (10 mg/dL) is notifiable to the Ministry of Health. Although overt clinical symptoms are unlikely at this level, there is a potential for subtle chronic effects.² In New Zealand (NZ), 201 total cases of lead poisoning were reported in 2010, equating to a rate of 4.6/100,000.³ Though lead poisoning is rare, it is crucial that we identify the source of exposure by good history-taking.

Hepatotoxicity is an additional typical finding in lead poisoning⁴ although this was not seen here. We have also reported this case to the NZ Pharmacovigilance Centre.

It is said that 99% of serum lead is bound to erythrocytes and the remaining 1% is free for exchange with soft tissues such as cortical bone, bone marrow, kidney and liver.⁵ The half life of lead is approximately 30 days in serum. However, once lead is deposited into other tissues, it will vary significantly and can be lengthened e.g. if deposited in bone, the half life can be up to a decade due to slow release into the blood stream, leading to prolonged elevation of lead levels.⁵

The characteristic blue “lead line” is caused by lead deposition in plaque rather than in the tissues of the gum or tooth.⁶

There are four reliable forms of chelation therapy. These are; Ca disodium EDTA (ethylenediaminetetraacetic acid), dimercaprol (BAL), DMSA (dimercaptosuccinic acid, an analogue of dimercaprol) and d-penicillamine. DMSA, being the effective oral form, is used typically in mild to moderate poisoning and should be used whenever possible to avoid hospital admission.⁷ However, in practice, NZ clinicians’ initial choice of chelating agents is often limited by what is promptly available and in what quantity.

Regular monitoring of lead levels is recommended to confirm a decrease in levels along with improvement of symptoms.⁸ The NZ National Poisons Centre (NPC) has developed guidelines for the management of lead poisoning, based on periodic review of the international literature. These are available for subscribers to the NPC electronic database⁹ or on phone consultation with the NPC.

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