

Case of Lead Toxicity in Ontario from Ayurvedic Medicine

Key Messages

- A recent case of lead toxicity in Ontario has been linked to the use of an Ayurvedic medicinal product.
- Some Ayurvedic medicines have been found to contain harmful levels of lead.
- Clinicians should be alert to the use of Ayurvedic medicines in their patients and order a venous blood lead level (BLL) if lead toxicity is suspected.
- Lead toxicity should be considered in patients presenting with abdominal symptoms and anemia.

A blood lead level can confirm whether findings are likely attributable to lead exposure.

Ontario Case of Lead Toxicity

In Ontario, a recent case of acute lead toxicity was linked to the consumption of Ayurvedic medicine. The patient had a blood lead level drawn as part of a work-up for tremor which showed a concentration of $>5.0 \mu\text{mol/L}$ ($>100 \mu\text{g/dL}$), roughly 100 times the current median for the Canadian population. The patient had been consuming an Ayurvedic medicinal product that had been purchased online (see photograph below). Testing of the product revealed a lead concentration of $51,000 \mu\text{g/g}$ (51,000 parts per million) and a mercury concentration of $45,000 \mu\text{g/g}$ (45,000 parts per million).

Risk from Ayurvedic Medicines

Ayurveda is a form of traditional medicine originating in India and South Asia. In addition to lifestyle modification and other therapies, Ayurvedic medicine can also involve the ingestion of preparations that may contain lead, mercury and arsenic.

Lead toxicity from Ayurvedic medicine use has been well-documented in Canada and the United States. In 2005, a Health Canada advisory warned consumers not to use certain unauthorized Ayurvedic medicines that had been found on the Canadian market, due to high levels of heavy metals.

Clinicians are advised to remain vigilant for the use of these products by their patients, given their associated health risks.



Lead Toxicity: Clinical Presentation

Depending on the degree of toxicity, patients with elevated blood lead levels may appear asymptomatic or may exhibit a range of signs and symptoms. These include:

- Abdominal pain, ranging from occasional discomfort, to diffuse pain, to “lead colic” (severe, intermittent abdominal cramps)
- Constitutional symptoms, primarily fatigue and general malaise
- Anemia
- Neurological dysfunction including poor concentration and peripheral motor neuropathy

Chronic lead exposure can have long term sequelae, including chronic interstitial nephritis or “lead nephropathy”, increased risk of hypertension, adverse reproductive effects, and neurological deficits related to learning, attention and development, especially in children.

Lead Toxicity: Laboratory Abnormalities

- CBC: hemoglobin, hematocrit may be low
- Peripheral smear: may be normochromic and normocytic, or hypochromic and microcytic; basophilic stippling may be present in patients exposed to lead at sufficiently high levels
- BUN, creatinine and uric acid might be elevated
- Blood lead level (BLL): elevated
 - Mean BLL in Canadians: 0.05 $\mu\text{mol/L}$ (1.1 $\mu\text{g/dL}$)
 - BLL > 0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$) is uncommon and may warrant environmental evaluation and repeat BLL testing
 - BLL > 0.97 $\mu\text{mol/L}$ (20 $\mu\text{g/dL}$) should prompt specialist referral for assessment of possible lead-related effects and need for therapy
- Lead toxicity should be considered in patients presenting with abdominal symptoms and anemia.

A blood lead level (BLL) can confirm whether findings are likely attributable to lead exposure.

Lead Toxicity: Management and Further Resources

- Removal of the source of exposure is the cornerstone of the management of a patient with lead toxicity.
- Clinicians may consult the following for guidance on assessment and management
 - Ontario Poison Centre: 1-800-268-9017 (416-813-5900)
 - Occupational and Environmental Health Clinic at St Michael’s Hospital: 416-864-5074
- Clinicians may contact their local Public Health Unit for assistance on investigating potential sources of lead exposure where the BLL is >0.48 $\mu\text{mol/L}$ (10 $\mu\text{g/dL}$).

References

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