Public Health Ontario | Santé publique Ontario

FACT SHEET

Lead Exposure from Ayurvedic Medicines

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Key Messages

- Some traditional and herbal medicines, including Ayurvedic medicines, have been found to contain harmful levels of lead and other heavy metals.
- Clinicians should be alert to the use of such medicines in their patients and order a blood lead level (BLL) if lead toxicity is suspected.
- Lead toxicity should be considered in patients presenting with abdominal colic and anemia.

Risk of Exposure to Lead 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 (as well as other traditional and herbal medications) can also involve the ingestion of preparations that have been documented to contain heavy metals, particularly lead, mercury and arsenic.

Lead toxicity from Ayurvedic medicine use has been well-documented in Canada and the United States.[1] A systematic review from 2015 looking at recently published cases of lead toxicity (2004-2014) found that of the 129 reported cases, 25 (19%) were attributed to Ayurvedic medicine consumption.[2] This source was second only to munitions exposure, which was implicated in 20% of cases. 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.[3] Such advisories have occurred regularly since, with at least one in 2006,[4] 2008,[5] 2015,[6] 2016,[7] and most recently in January of 2019.[8] These have been in response to products that have been commercially available; many cases have been anecdotally reported by local clinicians from exposure to privately imported products, which do not benefit from such advisories.

In Ontario, several documented cases of lead poisoning attributed to Ayurveda have been reported. In 2016 a case was identified of a patient with tremors, who was found to have a blood lead level (BLL) of >5.0 µmol/L (>100 µg/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. Testing of the product revealed a lead concentration of 51,000 µg/g (51,000 parts per million) and a mercury concentration of 45,000 µg/g (45,000 parts per million).[9] At least two other cases were seen in one clinic in Toronto from 2012-2015 where BLLs were similarly elevated due to Ayurvedic medicine use.[10]

The week of January 28, 2019, Health Canada issued a warning about various medicinal products sold by an Ayurvedic clinic in Surrey, B.C. A number of medicines were seized and confiscated by Health Canada after a case of lead poisoning was linked to products sold at that establishment and to customers online, later found to have elevated concentrations of lead.[8] This clinic also has a location in Brampton, Ontario.

Clinicians are advised to remain vigilant for the use of these products by their patients, given their associated health risks. Depending on the degree of toxicity, patients with elevated BLLs 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.

Medical Investigations for Lead Toxicity

- 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) and suggested follow-up actions:
    - Median BLL in Canadians aged 3-79: 0.044 µmol/L (0.92 µg/dL)[11]
    - BLL > 0.48 µmol/L (10 µg/dL) is uncommon and may warrant environmental evaluation and repeat BLL testing
    - BLL > 0.97 µmol/L (20 µg/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.

Management of Lead Toxicity and Resources

- Removal of the source of exposure is the cornerstone of the management of a patient with lead toxicity.[12]
- 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 µmol/L (10 µg/dL).

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