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EDITORIAL

AYURVEDIC LEAD POISONING: AN UNDER-RECOGNIZED, INTERNATIONAL PROBLEM

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In this issue, Singh and colleagues^[1] highlight the persistent international problem of heavy metal contamination, particularly lead, in traditional medicine products (TMPs). Certain TMPs from Asia. Latin America and the Middle East have all been associated with lead poisonings.^[2] With travel and migration, contaminated TMPs have resulted in heavy metal intoxications in persons residing in countries far from the medications' origins, including North America, Europe and Oceania. The United States' Centers for Disease Control and Prevention have reported on lead poisoning due to traditional remedies several times in recent decades, most recently describing 12 cases of lead poisoning due to Ayurvedic TMPs between 2000 and 2003.^[3]

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More than 80 cases of lead poisoning associated with Ayurvedic medicine use have been reported in the literature worldwide since 1978;^[2-4] however, Singh and colleagues' case is among the few reported from within India. On the other hand, it has been estimated that approximately 80% of India's 1 billion population uses Ayurveda, a traditional medicine system native to the Indian subcontinent.^[5] What explains this apparent paradox that so few cases have been reported from India? Many Ayurvedic medicine users believed to be unaffected by lead may actually have unrecognized, misdiagnosed and/ or subclinical metal intoxications. A major reason that lead poisoning may escape diagnosis is due to the nonspecific signs and symptoms produced both in children and adults (e.g., anemia, growth retardation, fatigue, abdominal pain, miscarriage). For example, even among patients who were ultimately correctly diagnosed with Ayurvedicassociated lead poisoning, it was common for them to undergo unnecessary endoscopy for abdominal symptoms or bone marrow biopsy for anemia before a simple blood lead test revealed the correct diagnosis.^[6] Other reasons

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for the failure to diagnose lead poisoning may be infrequent consideration in the differential diagnosis; lack of availability of routine blood lead measurement; and certain patients consulting only Ayurvedic practitioners to the exclusion of allopathic physicians. In the patient reported on by Singh *et al.*, lead poisoning was not recognized at the first hospital consulted, and he could have easily had his neuropathic symptoms incorrectly attributed solely to his known diabetes mellitus. In fact, the peripheral neuropathy most likely resulted from an interaction of lead and diabetes.

While the true public health impact of leadcontaminated Ayurvedic TMPs in India remains unknown, the following facts are generally accepted. Ayurveda experts estimate that 35% to 40% of the approximately 6000 medicines in the Ayurvedic formulary intentionally contain at least one metal.^[5] India's known toxic metal burden is quite substantial: more than 50% of children in Indian cities have blood lead levels of 10 µg/dL or greater, and almost 20% have levels 20 µg/dL or greater.^[7] Case reports of clinical intoxication documenting toxic levels of lead in patients' blood provide strong evidence that the metals contained in these Ayurvedic products are not "detoxified" through traditional means of preparing the TMPs. In Singh and colleagues' case, unacceptable amounts of lead were documented in various Ayurvedic products, the patient's blood lead was measured at 74 µg/dL (adult poisoning threshold, lead \geq 40 µg/dL), and the patient's symptoms and nerve conduction parameters improved with chelation therapy to remove lead. Thus, the authors provide convincing evidence implicating lead as the cause of their patient's illness.

What could be done to learn more about the impact of lead-contaminated TMPs among India's population? We believe that future research should be undertaken to perform lead screening among typical Ayurveda users, especially among more vulnerable groups like children and pregnant women, while controlling for other potential environmental lead-exposure sources. We encourage collaboration between traditional drug manufacturers and practitioners, and allopathic research scientists and public health experts to foster objective study of these medications.

In the meantime, there is already sufficient evidence to educate clinicians so that they consider Ayurvedic TMP intake in the differential diagnosis of heavy metal toxicity, as well as think about lead toxicity due to TMP intake in unexplained illnesses such as anemia, neuropathy, gastrointestinal complaints or adverse reproductive outcomes. Finally, the present case supports the need for regulatory changes in India to require safe heavy metal limits in Ayurvedic, Siddha and Unani medicines intended for domestic use within India.^[8]

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