

Lead Poisoning Due to Herbal Medications

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Abstract Lead ranks as one of the most serious environmental poisons all over the world amongst toxic heavy metals with no known biological function useful for the human body. A case of lead toxicity due to consumption of herbal medicine is being discussed. The case presented with gastrointestinal complaints and history of intake of herbal medicines for diabetes control for past 8 months. The analysis of the powdered herbal medicine procured from ayurveda practitioner was found to have high content of lead responsible for the lead toxicity. The patient is under regular followup. He has improved symptomatically on chelating therapy and blood lead levels have gradually improved. Regular awareness programs should be conducted in the population regarding possible exposure through home made herbal remedies so that general public can be made aware of the dangerous side effects of lead and other heavy metals on health.

Keywords Lead toxicity · Herbal medications

Introduction

Lead in the environment remains to be a matter of grave concern for the public health as it accounts for 0.6 % of the global burden of disease, with the highest burden in WHO South-East Asia region [1]. Various pathways can lead to human lead exposure. Common causes leading to lead toxicity include use of certain products usage such as lead soldered cans, folk remedies, alternative medicines, cosmetics, artisan ceramics, occupations involved in production, use and recycling of lead, smelting, refining, alloying and casting, lead acid battery manufacture, and printing, jewellery making etc. [2]. The blood lead level in population has a decreasing trend worldwide but still lead toxicity is seen in considerable amount in the society. Herbal medicine usage is a common perpetrator because of its popularity due to the belief that it has no side effects as the source is mostly plants. A case of lead poisoning due to herbal medications is being discussed.

Case Report

We present a case of 73 year old male admitted with the complaints of pain in the lower abdomen, decreased appetite, general body ache, tiredness, constipation, nausea and vomiting. The patient was a known case of ischemic heart disease and hypertension who had undergone Coronary Artery Bypass Graft in the past. He was recently diagnosed with Diabetes mellitus for which he was on alternative medicine for past 8 months. On examination his blood pressure was found to be 174/110 mmHg, pulse 72/min and had pallor. His systemic examination was normal. He was advised USG abdomen which reported mild prostatic enlargement.

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Table 1 Blood investigations

Investigation	22/10/15	5/11/15	23/03/16
Haemoglobin (g%)	9.8	11	13.7
Haematocrit (%)	28.2	36.1	40.6
RBC count	$3.79 \times 10^{12}/L$	$4.27 \times 10^{12}/L$	$5.23 \times 10^{12}/L$
MCV (fL)	74.31	84.5	77.6
MCH (pg)	25.82	25.8	26.2
MCHC	–	30.5 g/dL	33.7 g/dL
TLC	12,230 [N76, L21, M3]	10,180	11,620 [N69, L28, M0.5, E1, B0.5]
HbA1c %	6.7 %	–	6.4 %
S Creatinine (mg/dL)	0.79	0.72	0.69
Blood urea (mg/dL)	19	24	21

Table 2 Serial blood lead level

Date	Blood lead level ($\mu\text{g}/\text{dL}$)
23/10/15	118.5
3/11/15	54
21/11/15	47.5
30/12/15	32.3
16/2/16	27.5
17/5/16	17.3

Table 3 Drug formulation analysis for heavy metals

Heavy metal	Result (ppm)	Permissible limit (WHO Canada for herbal formulations, 2007) ppm
Arsenic	2.9	5
Cadmium	ND	0.3
Lead	638.19 g/kg	10 mg/kg

The patient underwent upper gastro intestinal endoscopy for recurrent vomiting which did not respond to conservative management. The report was suggestive of hiatus hernia and esophagitis. Further CT angiography was planned due to persistence of vomiting. The report was suggestive of atheromatous changes in abdominal aorta and its branches with mild luminal narrowing at origin of celiac artery, fatty liver and hemangioma in right lobe of liver with mild prostatic enlargement. The patient was started on conservative management. The herbal medicine being taken by the patient was sent for heavy metal analysis to NRCLPI, Dept of Biochemistry, KGMU Lucknow. The patient underwent various baseline biochemical investigations. His haemoglobin level was low and peripheral blood smear was suggestive of normocytic hypochromic anemia which was supported by serum iron and total iron binding capacity levels. The baseline glycated haemoglobin was 6.9 %. Rest of the baseline biochemical investigations

(Table 1) and hepatitis viral markers were within normal limits.

Patient was advised to withhold intake of powdered herbal medicine. He was started on chelating agent (D-penicillamine) and other conservative management for associated ailments and is being followed up on regular basis. His symptoms have improved gradually and serial blood levels have shown decreasing trend (Table 2). Lead is known to cause anemia [3]. Following chelation therapy complete blood counts were repeated and the hemoglobin levels have improved gradually.

Patient was consuming powdered herbs prepared by quack for diabetic control for past 8 months. The sample was analysed for arsenic, cadmium and lead by ICP-OES in Department of Biochemistry KGMU Lucknow. The formulation was found to have very high amounts of lead (Table 3).

Conclusion

The patient was diagnosed to have lead toxicity attributable to consumption of home made powdered herbal remedy prescribed by a ayurvedic practitioner. Herbal medicines may contain potentially harmful levels of heavy metals and people who use them are at risk of developing associated toxicities. Nonetheless, this remains significant and poorly recognized public health problem.

References

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