INTRODUCTION

Thallium is a heavy metal which is tasteless, odorless, completely dissolves in liquids, absorbed quickly, and defies detection on routine toxicological screens. The clinical features of its toxicity are nonspecific due to the multiorgan involvement, hence diagnosis is often delayed till alopecia appears. We report a case of acute, nonintentional thallium poisoning due to thallium-contaminated alternative medicine.

CASE REPORT

A 15-year-old female was referred to emergency department for recurrent abdominal pain, severe tingling, and burning sensation followed by weakness in both lower limbs for 15 days. There was no other relevant history to account for presentation. On examination, she was conscious, disoriented, febrile (100 F), and dehydrated. She was hemodynamically stable and maintaining adequate saturation in the room air. She had mild abdominal distension and diffuse abdominal tenderness. Neurological examination revealed generalized wasting and hypotonia in all the four limbs with predominately distal weakness. Deep tendon reflexes were depressed and planter responses were extensor. The possibility of Guillain–Barre syndrome and porphyria was considered and investigated accordingly, but was in vain. On the fourth day of her admission, diffuse fall of scalp hair was observed. A gentle pull of hair over the scalp caused painless extraction of a cluster of hairs comprising more than 40 hairs. By the end of fifth day, she virtually became total alopecic. A trichogram revealed 95% of the hairs in dystrophic anagen status with dark bands caused by empty spaces in the disorganized cortex and black pigmentation at the base. The combination of rapid, diffuse alopecia, with neurological and gastrointestinal disturbances, made the diagnosis of thallium poisoning highly probable.

ABSTRACT

Thallium is a toxic heavy metal often involved in criminal poisonings and occasionally in accidental poisoning. Here, we report a case of acute, nonintentional thallium poisoning due to thallium-contaminated alternative medicine for its rarity and to create awareness about the combination of rapid, diffuse alopecia with neurologic and gastrointestinal symptoms among practitioners, professionals, public, and policymakers.

Key words: Abdominal pain, analysis of hair, muscular weakness, painful neuropathy, thallium poisoning, alopecia, traditional medicine

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us to suspect thallium poisoning. Her blood and urine thallium levels by atomic absorption spectrophotometer were 988 (normal <10) and 701 µg/ml (normal 10 µg/ml), respectively, on the 22nd day. Thallium concentration in her hair was 2850 ppb (normal <10 ppb).

She was treated with intravenous potassium chloride infusion, multidose of activated charcoal, and multivitamin supplements after confirming the diagnosis of thallium poisoning. She was subjected to hemodialysis. After her first dialysis, sensorium improved. She had a total of five dialysis without any untoward events. Ultimately, a meticulous anamnesis revealed that she had taken alternative medicine for her menstrual problems for about 15 days prior to hospitalization, which was found to have thallium. The reasons for the presence of thallium in the alternative medicine could not be ascertained. The hair started growing after about 2 months.

**DISCUSSION**

Thallium is a colorless, tasteless, odorless heavy metal, and dissolves totally in liquids. It is readily absorbed when taken orally and defies detection on routine toxicological screens. The wide clinical spectrum of thallium poisoning makes it difficult to suspect in its early stage, especially in the absence of a reliable history.[3] Painful peripheral neuropathy and alopecia are pathognomonic of thallium toxicity.[3] The hair mount, showing a tapered or bayonet anagen status with black pigmentation at the base, helps to arrive at the diagnosis even before the onset of alopecia.[8]

Thallium does not have an internal anatomic reservoir, but has an affinity to keratin. This explains why its concentration was high in the hair and nail. Due to technical difficulties, the concentration of thallium in nail could not be determined. The increased concentration of thallium in the hair helps in the diagnosis of this poisoning. Moreover, hair is the most relevant and a useful material for the diagnosis of metal toxicology cases.[3] The elevated concentration of thallium was demonstrated as early as 2–3 weeks after ingestion and as late as 13 months after cessation of occupational exposures.[6]

Many of the alternative medicines are advertised and sold over the counter or through internet as safe. The public believe that these are harmless medicines. Hence, the public have to be informed that alternative medicines at times produce life-threatening complications as seen in the case presented. In view of that, the treating doctors or emergency physicians should elicit the history of consumption of traditional medicines routinely while they are confronted with a complex or perplexing clinical presentation.[7,8] Moreover, the students of health sciences and practitioners shall be taught to suspect minerals or biological materials present in traditional medicines and evaluate them accordingly.

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**Conflicts of interest**

There are no conflicts of interest.

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