THE APPROACH TO PHYTOTHERAPY APPLICATIONS: A CASE REPORT OF HYPERKALEMIA

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Abstract

We describe the effects of a phytotherapy application for purpose of weight loss in a case of hyperkalemia. A 59-year-old woman presented with fatigue and weakness for the previous three months. Physical examination was unremarkable, apart from obesity. Her serum potassium level was 5.54 mmol/L. The patient's symptoms were attributed to hyperkalemia. We learned that the patient had been using a mixture of three sticks of cinnamon dissolved in one liter of water and lemon juice every day for three months as a slimming regimen. The hyperkalemia was attributed to phytotherapy applied as a slimming regimen.

Key words: Phytotherapy, Obesity, Cinnamon, Side effect.

Dear Editor,

Ninety-eight percent of potassium is present in intracellular fluid and 2% in extracellular fluid (3.8-5.0 mmol/L). Eighty percent of potassium intake is from passive absorbance through the small intestine. Hyperkalemia is rare in normal individuals. K⁺ elevation in extracellular fluid is prevented through regulatory mechanisms. Symptoms are non-specific in mild hypokalemia. Vital signs are generally normal. Muscle or cardiac functions may be affected. Bradycardia, cardiac block, tachypnea, respiratory muscle paralysis, muscle paralysis, flaccid paralysis, and depression in deep tendon reflexes occur with an increase in potassium levels. Three mechanisms are implicated in the development of hyperkalemia: excessive intake, low excretion (acute kidney failure, chronic kidney failure, and drugs such as potassium-retaining diuretics, non-steroidal anti-inflammatory drugs, heparin, angiotensin converting enzyme inhibitors, angiotensin receptors blockers, beta blockers, and digoxin) and a shift of potassium from the intracellular to the extracellular space (for reasons such as exercise, rhabdomyolysis, crush syndrome, tumor lysis syndrome, tissue necrosis, and hyperkalemic periodic paralysis). Causes of pseudohyperkalemia

include measurement errors, hemolysis, leukocytosis, thrombocytosis and tourniquet compression (1).

Phytotherapy is defined as the use of standardized pharmaceutical forms (tablets, capsules, tinctures, etc.) prepared with or based on plants with a scientifically proven medical efficacy in protection against and treatment of diseases, or of natural products containing the effective parts thereof and/or obtained using various procedures. One in four medical drugs is plant-derived. In most of these, the substance obtained from the plant is produced synthetically under laboratory conditions. Medical and economic problems caused by side-effects developing in association with synthetic drugs, ecological policies reinforced by environmental pollution, the existence of chronic diseases for which curative treatments are not yet available, and the idea that natural products are always effective and harmless have made herbal medicine popular once again (2).

Herbal medicine is applied under the heading of complementary medicine in some countries. Despite widespread use, there are still no definitions of side-effects associated with phytotherapy applications, and it is estimated that very few undesired events that occur have actually been reported (3, 4). Our aim was to investigate the effects of phytotherapy for weight loss in a case of hyperkalemia.

CASE PRESENTATION

A 59-year-old woman presented with fatigue and weakness persisting for the previous three months. Physical examination was unremarkable except for obesity. The patient stated that she lacked the energy even to raise her arms. She had a history of long-term atenolol use due to hypertension. Laboratory findings were leukocyte count: 6.84 (10⁹/L), Hb: 13.4 g/dL, ferritin: 40 ng/mL, CRP: 0.4 mg/dL, glucose: 99 mg/dL, HDL: 77 mg/dL, LDL: 157 mg/dL, triglyceride: 99 mg/dL, TSH: 1.4 uIU/mL, and vitamin B12: 151 pg/mL. Vitamin B12 therapy was advised. The patient

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represented when the symptoms failed to improve following two-month vitamin B12 therapy. Laboratory analysis results were leukocyte count: 6480 ($10^9/L$), CRP: 0.45 mg/dL, cortisol: 11.64 microgram/dL, sodium: 143 mmol/L, and potassium: 5.54 mmol/L (reference range: 3.5-5.1). The patient's symptoms were regarded as associated with hyperkalemia. A more detailed history was taken. We learned that the patient had been using a mixture consisting of three sticks of cinnamon dissolved in 1 liter of water and lemon juice every day as a slimming regimen for the previous five months. The hyperkalemia was linked to phytotherapy used as a slimming regimen. After one month, the serum potassium level of the patient was measured as 4.35. The complaints of the patient were completely improved.

DISCUSSION

There have been numerous published cases of hyperkalemia resulting from excessive intake of foodstuffs such as apricot, banana, orange, apple and tomato (5-8). These are all cases involving foodstuffs consumed in daily life. In our case, hyperkalemia resulted from the use of cinnamon, a spice, as a phytotherapy product. For treatment, the period of cinnamon application varies between 3 months and 6 months in human studies (9). Herbal medicines are generally used today by patients with chronic diseases such as breast cancer, liver diseases, HIV, asthma and rheumatic diseases (10). However, herbal products also continue to be used in a wide area in which there is no supporting information in the literature, similarly to our own case. Very small doses of identified and potentially fatal plant molecules such as morphine, digitalis, and curare can actually be therapeutic, and yet excessive quantities of water and oxygen, which are essential to life, can be fatal (11).

Guided by the traditional use of plants, pharmaceutical companies have identified and synthesized many of their active compounds. Safe, toxic and lethal dose concentrations of these synthesized substances have been determined by analytic, toxicological, pharmacological and clinical studies, and it has become possible to predict their effects. Nonetheless, even drugs that have been placed on the market after being licensed following various safety tests still exhibit side-effects and potential interactions with other drugs (12). Phytotherapy products contain numerous chemical compounds. Each of these molecules may have its own separate side-effects and drug interactions. A molecule with therapeutic properties must therefore be described in detail, and safety tests must be performed in an

evidence-based manner.

In conclusion, we recommend that the role of phytotherapy, regarded as a complementary medicine modality, in therapeutic procedures be re-assessed.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

Conflict of interest

The author did not receive any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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