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EC EMERGENCY MEDICINE AND CRITICAL CARE

Case Report

Sweet Tooth Hypertension

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Abstract

This case report depicts the effect of licorice on an otherwise healthy 39 years old gentleman who presented with acute onset hypertension. The patient presented to the hospital with symptoms of hypertensive urgency. The patient started taking licorice for resolution of symptoms of renal colicky as a herbal remedy, but the patient loved the taste so he started drinking it excessively.

The patient was admitted into the hospital for further investigations to exclude any other cause of licorice ingestion. The patient had complete resolution of his symptoms of his symptoms after he stopped drinking the licorice.

In this case report we discuss the pathophysiology of licorice induced hypertension, the clinical presentation to emergency department and remedy of the condition. This topic is of principal importance as licorice is a plan commonly known and used frequently both in the East and the west. It is used as a herbal medication and in food industry as a sweetener as it is 50 times sweeter than sugar.

Keywords: *Hypertension; Licorice*

Background

Licorice is a famous plant that has a long history in Ayurveda. It is popular both in the East as well as in the West. Licorice has been used for a variety of indications mainly upper gastrointestinal tract symptoms such as indigestion/heartburn. It is used in food products primarily confectionary and tea. We present a case of a young man who attended the emergency department (ED) with an incidental unexplained hypertensive urgency which was found to have consumed excessive licorice.

Case Presentation

A 39 year male of Asian origin, presented to the emergency room with sudden onset of left flank pain with a pain score of 9/10. The pain was associated with nausea and vomiting. Vital signs showed a blood pressure reading of 214/153, Temperature 36.8, Respiratory rate 22, Oxygen Saturation 99%. He had similar episodes of flank pain a few months ago and was diagnosed as renal colic in his home country. However, his follow-up ultrasonography of the kidneys showed no urinary tract calculus. There was no other significant past medical, surgical or family history. He smokes cigarettes and drinks alcohol only on social occasions.

It was initially felt that elevated Blood Pressure could be related to his acute flank pain. However, despite the analgesia and subsidence of his pain symptoms, the high BP remained. Furthermore, on investigations including blood and radiological (CT chest and Abdomen with and without contrast), there was no evidence of end-organ damage from long-standing undiagnosed hypertension, aortic dissection or proof of any urinary tract calculus. Blood investigation revealed hypokalemia 3.1 mmol/l. Delving deeper into the history revealed, he had started to drink licorice approximately three months before the ED attendance. He believed that licorice had a diuretic effect and

would flush out any urinary tract calculus. He started to like the sweet taste and thus drank 3 to 4 glasses per day (excessive). The patient was diagnosed with Licorice Induced Hypertension and admitted under the care of Internal Medicine for further management and blood pressure control including stopping licorice usage.

Discussion

Licorice is an ancient plant that was used by the ancient Egyptians and Chinese. It is native to Western Asia, Africa, the Middle East, and some European countries. The main component is "Glycyrrhizin" that is 50 times sweeter than sugar [1]. Licorice is available in both liquids and solid forms. The sweetness is very different from sugar, being less instant, tart, and lasting longer.

Licorice was widely used in the past to treat many medical conditions such as stomach ulcers, cough, and sore throat [2]. Some homoeopathist's still advocated the use of licorice for digestive problems, menopause symptoms, cough, and infections. In India, it has been used as an herbal medicine for the treatment of renal stones.

Licorice affects the cardiovascular and renal system. Glycyrrhizin affects the 11β-hydroxysteroid dehydrogenase (11β-HSD) enzyme that is found in mineralocorticoids expressing organs such as renal cortex, adrenal medulla, and sigmoid colon [3]. Under normal physiological body condition, this enzyme converts cortisol to cortisone. If licorice were ingested in high amount, Glycyrrhizin would inhibit 11β-HSD resulting in excess cortisol that will bind to mineralocorticoids receptors (MR). Cortisol binding to the MR will occur in a condition similar to "Syndrome of Apparent Mineralocorticoid Excess" which manifests itself as Hypertension, Hypokalemia and Low Plasma Renin Activity. Licorice can cause dysrhythmias when taken in combination with any medication that may cause hypokalemia (e.g., Diuretics) [4].

Studies have revealed that the effect of Glycyrrhizin on 11β-HSD type 2 is dose-dependent [5]. A study from Iceland identified a dose-related response to licorice on BP. 10mg /day of licorice is considered to be a safe dose [5].

Cessation of the use of Licorice often results in the return of normotension.

Conclusion

Licorice is still being widely used in many parts of the world including the Middle East. Any patient who presents to the ED with unexplained hypertension, it would be wise to seek a careful history of ingestion of homeopathic medications including that of Licorice.

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