

Hepatotoxicity after 51 days use of Green tea

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Abstract: Aim of this case report is to show a unique case of transient hepatotoxicity developed after 51 days weight-diet protocol with 4 glasses of green tea. A young girl (22) was brought at the Clinic presented with fatigue, nausea, pain in the liver. The symptoms began 2 days prior the admission. We learned a fact, that she was finishing the III round of the 17 day green tea diet. During this health regime she didn't have any health issues. Physical exam showed jaundice and a discreet pain under the right costal varnish. Initial labs included elevations in the serum aminotransferase levels (aspartate aminotransferase 344; alanine aminotransferase 288) serum bilirubin total 48; bilirubin direct 28; factor VII 66%. Because of the suspicion that the green tea is responsible for the hepatotoxicity, we stopped its intake immediately. The patient refused a liver biopsy. The controlled analysis that we performed 7 days on ongoing treatment showed a significant bilirubin decrees, a normalization of VII 7, and a discreet decrees of AST and LM. The control lab analysis we took after a month of initial treatment showed a complete normalization of the lab parameters. Three weeks after the normalization of the labs, the patient came to our clinic once again, with similar symptoms, but without the jaundicing. During the exam she admitted that she took green tea, the previous two days, in the morning prior breakfast. The lab showed a mild elevation in the AST 44 and ALT 48.

Keywords: green tea, hepatotoxicity, diet

INTRODUCTION:

Green tea (*Camellia Sinesis*) is one of the most popular teas all around the world. In the last decade, the consumption of tea, particularly green tea, has been largely increased for its reported health benefits for many diseases, as cardiovascular, neurodegenerative diseases, obesity, diabetes mellitus etc [1]. Green tea has long been believed to have health restoring properties and its ingredients to have antioxidant activity. For this reason, extracts of green tea have been used as an herbal medication alone and in combination with other herbals and dietary supplements which are advertised to improve health. Green tea extract is listed in more than 100 over-the-counter herbal preparations, but is not approved for any specific medical indication. Green tea is made from steaming of the tea plant, *Camellia sinensis*. Polyphenols, including catechins and flavanols make up 30%-40% of the extractable solid of dried green tea leaves. The main catechins consist of epicatechin, epicatechin-3-gallate, epigallocatechin, and EGCG. It is proposed that these compounds or extracts give green tea its anticarcinogenic, antioxidant, probiotic, and thermogenic properties [2].

The mechanism by which green tea may have such effects has not been elucidated [3,4]. Despite studies that show the benefits of green tea, there have been several reports in last decade that demonstrate

hepatotoxicity following the consumption of concentrated green tea extract. Much interest in green tea hepatotoxicity came after the discontinuation of Exolise, a weight-loss product containing a hydro alcoholic extract of green tea, in France and Spain following the report of acute liver injury with the use of this product [5, 6, 7].

Aim of this case report is to show a unique case of transient hepatotoxicity developed after 51 days weight-diet protocol with 4 glasses of green tea.

CASE REPORT:

A young girl (22) was brought at the University clinic of Toxicology, and presented with fatigue, nausea, pain in the liver area and a darkening of her urine. The symptoms began 2 days prior the admission in our day care unit, but she noticed the darker urine on the day of the exam. She denied changes in her stool, fever, alcohol consumption, sick contacts or recent travel. We learned a fact, that she was finishing the III round of the 17 day green tea diet (a weight loss plan). Over this time period she lost 9 kg. During this health regime she didn't have any health issues. On physical exam the patient was jaundiced, most evident in the face and sclera, but also presented on the upper extremities, and a discreet pain under the right costal varnish. Initial labs included marked elevations in the serum aminotransferase levels

(aspartate aminotransferase 344; alanine aminotransferase 288) serum bilirubin total 48; bilirubin direct 28; factor VII 66%. Extensive lab work was ordered to determinate the etiology of the liver lesion, and we excluded infectious, hereditary or immune etiology of the hepatotoxicity.

Because of the suspicion that the green tea is responsible for the hepatotoxicity, we stopped its intake immediately. She was observed and treated in the day care unit of our hospital. Treatment included intravenous fluids with 10% Dextrose content (500 ml), amp. K Vitamin i.v., tabl. Liver Care 2x1. The second day of the treatment, an urgent abdominal and urogenital tract ultrasound was done, and the result was insignificant. The patient refused a liver biopsy.

The controlled analysis that we performed 7 days on ongoing treatment showed a significant bilirubin decrease, a normalization of VII 7, and a discrete decrease of AST and ALT. The patient continued with intravenous fluids for a week and hepatoprotective therapy for 3 weeks. The control lab analysis we took after a month of initial treatment showed a complete normalization of the lab parameters (bilirubin 12, AST 23 ALT 19) indicating resolution and recovery of her liver function.

Three weeks after the normalization of the labs, the patient came to our clinic once again, with similar symptoms, but without the jaundicing. During the exam she admitted that she took green tea, the previous two days, in the morning prior breakfast. The lab showed a mild elevation in the AST 44 and ALT 48. A week later, after the intake was stopped, the lab became referent, and all the symptoms withdrew.

DISCUSSION:

We are presenting a unique case of hepatotoxicity developed after 51 days of continuous intake of four glasses of green tea. The dose and the period of ingestion was thought that are saved and can't produce any hepatic injuries. The patient was a healthy young female, without any previous or detected disease, as a possible reason for transient hepatotoxicity. Opposite of our case, human clinical studies demonstrate that single doses of up to 1.6 grams of green tea extract are well tolerated. The maximum tolerated dose in humans is reported to be 9.9 grams per day; a dose equivalent to 24 cups of green tea [8]. Side effects of high doses of green tea extract are usually mild and include headache, dizziness and nausea. The safety and tolerability of long term use of green tea extracts has not been well defined [9]. Most of the studies are connected with green tea extracts, products that contain green tea, and green tea infusions. Most of the studies show longer period for developing hepatotoxicity than in our case. Amariles et al.; present

a 43 year old woman taking green tea infusions for constipation for 8 months developed nausea [bilirubin 2.1 mg/dL, ALT 841 U/L, Alk P 100 U/L], with rapid recovery upon stopping [10]. Verhelst et al.; present a case of 41 year old woman who developed jaundice 6 months after starting green tea containing herbal [11]. Rohde et al.; published a case of patient with liver injury arising 6 months after starting ingestion of 4-6 cups of green tea daily [12].

In the last published review article, Mazzanti *et al.*; made reviews of the hepatic adverse reactions associated with green tea based herbal supplements, published in the period of 2008 to March 2015. Only nineteen cases of hepatotoxicity related to the conception of herbal products containing green tea were identified. The hepatic reaction involved mostly women (16/19). Only in seven cases, patients used preparations containing only green tea, with latency period of 6 months and recovery time of two months [13].

CONCLUSION:

We present a case of green tea induced hepatotoxicity. Symptoms developed earlier than two months, and recovered in less than a month. The new intake two months later, result with repeated mild hepatotoxicity.

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