

Hepatotoxicity due to the Consumption of a Plant Growing In Eastern Anatolia: A Case Report

Bilger Çavuş^{1*}, Mehmet Alagöz², Zekeriya Aksöz³ and Hikmet Cengiz⁴

¹Department of Gastroenterology, Bingöl State Hospital, Turkey

²Department of Internal Medicine, Bingöl State Hospital, Turkey

³Department of Hematology, Atatürk University, Turkey

⁴Bingöl University, Turkey

*Corresponding author: Bilger Çavuş, Department of Gastroenterology, Bingöl State Hospital, İstanbul, Turkey, Tel: 05362944296; E-mail: dr_bilgercavus@yahoo.com

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Abstract

In this case report, we present patients who presented to emergency department with gastrointestinal symptoms developing after consumption of a plant known by local people for its medicinal properties, and had prolonged coagulation test parameters and elevated liver transaminase levels 15-20 times of the reference limit. The consumed plant was examined, and identified as *ferulacommunis*. The patients who developed toxic hepatitis showed spontaneous clinical resolution within a 6-7 days period.

Keywords Acute hepatitis; Hepatotoxicity; *Ferula communis*

Introduction

The liver, which plays a key role in maintaining metabolic hemostasis, is also essential in the detoxification of our body. With so many functions, the liver is, therefore, the most severely affected organ by toxicity. Plants are important causes of hepatotoxicity [1]. Plants are essential for humans. Although plants have long been used as medicines since the ancient times, humans have always been aware of the fact that some can be poisonous [2]. The earth is rich in plant species. However, one of the most fundamental problems with regard to this rich variety is that we don't have adequate knowledge about the effects of these plants in terms of human health. For this reason, there are frequent reports of cases of hepatotoxicity due to the consumption of different plants from various parts of the world.

In this report, we present hepatotoxicity development affecting all family members following consumption of a plant called the great fennel, *F.communis*, which is grown in Eastern Anatolia region.

Case Presentation

A total of seven people, all from the same family, presented to emergency department following consumption of a meal made with the plant *F.communis*, also called the great fennel (4 ingested the meal 5 days before presentation, whereas 3 ingested 2 days before); three of the cases presented with nausea-vomiting and abdominal distention (Figure 1). The patients did not have diarrhea or constipation. They presented to emergency department two days after the onset of their symptoms, which did not improve during this time. Physical examination of the patients did not show any pathological signs apart from the epigastric tenderness. Laboratory work-up revealed elevated

liver transaminases and prolonged INR values. The patients were admitted to gastroenterology ward for further investigation and treatment. Although available information from the anamnesis primarily raised suspicion of toxic hepatitis, all patients were tested for HBsAg, Anti-HCV, Anti-HIV, Anti-HBcIgM, and Anti-HAVIgM, and all were found as negative. It was learned that the patients did not consume mushroom or any suspicious drug. For their treatment, i.v. hydration with saline was started 100 cc/hr. Metoclopramide 10 mg i.v. was administered for the complaints of nausea and vomiting. Acetylcysteine infusion was started for hepatocyte prophylaxis. Three of the patients developed rash, urticaria and respiratory distress in the first 10 minutes of the acetylcysteine infusion, so the infusion was stopped. The anaphylactic reaction spontaneously resolved afterwards. During their follow-up, patients showed spontaneous clinical improvement after two days, along with normalization of their liver transaminase and INR levels. It was learned that 4 more family members had ingested the same meal 5 days before, and these family members were also examined with laboratory tests. According to their history, they also stated that they had episodes of nausea that did not last very long. These 4 patients were also found to have elevated transaminases (although it was not as high as in those presenting 2 days after eating the meal). In all patients liver transaminases and INR levels returned normal spontaneously. The cases were consulted to Faculty of Agriculture for identification of the plant species ingested by the patients. The plant responsible for the toxicity was determined to be *F.communis* (Table 1).

Patients	Age	Gender	Time of examination- in relation to consumption of the meal	Comorbidity	Medications	Creatinine mg/dl	AST / ALT U/L	ALP / GGT U/L	LDH U/L	INR	T.Bil / D.Bil mg/dl
Case 1	38	Female	2 days later	None	None	0.87	563/810	63/21	673	1.93	0.6/0.1
			5 days later			0.82	73/438	57/25	227	1.05	0.7 / 0.1
Case 2	36	Female	2 days later	DM	Metformin	0.68	645/755	59/70	697	1.97	0.7 / 0.1
			5 days later			0.74	191/708	53/77	415	1.16	0.6/0.1
Case 3	36	Female	2 days later	DM, HT	Metformin Ramipril	0.99	408/685	51/56	835	1.75	0.6/0.14
			5 days later			0.88	61/308	43/49	183	0.97	0.7 / 0.1
Case 4	71	Female	5 days later	DM	Metformin Gliclazide	1.32	34/105	77/22	306	1.55	0.4 / 0.05
Case 5	39	Female	5 days later	None	None	0.97	30/136	47/30	300	1.53	0.4 / 0.09
Case 6	68	Male	5 days later	HT	Amlodipine	1.22	30/110	72/58	312	1.82	0.4/0.06
Case 7	43	Female	5 days later	None	None	0.90	21/89	89/54	275	1.44	0.5/0.1

Table 1: Patient characteristics.



Figure 1: Giant fennel – *Ferula communis*.

Discussion and Conclusion

It has been reported that consumption of *Fcommunis* may be associated with a severe hemorrhagic condition called ferulosis in cats and sporadically in humans [3]. In some species of this plant, albeit its profound antibacterial activity, the substance called the ferulenol has been shown to act as a major toxin, to disturb microtubular interactions and to induce mitochondrial dysfunction. Ferulenol has been implicated in inhibition of oxidative phosphorylation. [4,5]. Although evidence from animal studies indicate that ferulenol causes reduced the activity of several coagulation factors, its exact role in the

bleeding diathesis is not completely understood yet [3,4]. Despite its renowned anticoagulant activity, there are few human case reports in the literature. In this report, we tried to summarize our findings in our cases who were affected with hepatotoxic and anticoagulant effects of *Fcommunis*, with the hope that it will contribute to the literature in this regard. Clinically, we did not observe any hemorrhagic complications in any of our cases. Interestingly, all three cases which we started acetylcysteine infusion for treatment of hepatotoxicity developed allergic reactions [4,6]. Since there is an abundant diversity of plants in different geographical areas, we are obliged to have knowledge and experience in this area as well. The contribution of our real-life experience to this fund of knowledge is important; nonetheless, experimental research contributes significantly to our knowledge.

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