Case Report
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A Contrary Case in the Literature: Hepatotoxicity Following Mallow Consumption

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Abstract

Mallow (Malva neglecta Wallr, M.sylvestris L.) is a plant species, it's key constituents include mucilage, pectins, glycosides, and flavonoids. The plant is believed to possess antimicrobial, antioxidant, anti-inflammatory, anti-ulcerogenic, hepatoprotective, anti-urolithiasis, anti-cholinesterase, and angiotensin-converting enzyme (ACE) inhibitory effects, as well as inhibition against alpha-amylase, alpha-glucosidase, and pancreatic lipase. Despite all the reported hepatoprotective and antioxidant effects of mallow, the elevation in liver function test values in our case is quite remarkable and contradicts the information available in the current literature.

Keywords: Mallow, poisoning, hepatotoxicity, emergency medicine

Introduction

Mallow (Malva neglecta Wallr, M.sylvestris L.) is a plant species, either annual or perennial, commonly found along roadsides, disturbed areas, and gardens. Its leaves, seeds, and roots are utilized for various purposes. Key constituents include mucilage, pectins, glycosides, and flavonoids[1]. The plant is believed to possess antimicrobial, antioxidant, anti-inflammatory, antiulcerogenic, hepatoprotective, anti-urolithiasis, anticholinesterase, and angiotensin-converting enzyme (ACE) inhibitory effects, as well as inhibition against alpha-amylase, alpha-glucosidase, and pancreatic lipase. In traditional medicine, it is employed for the treatment of gastritis, gastric ulcers, cough, bronchitis, and pharyngitis[2].

In this report, we aim to present a case of acute abdominal pain following the ingestion of mallow, leading to an elevated liver function test (LFT) not previously reported in the literature. The patient was admitted with a preliminary diagnosis of toxic hepatitis.

Case Report

A 70-year-old male patient presented to our emergency department with abdominal pain. Vital signs were within normal limits. Physical examination revealed tenderness in the epigastric and right upper quadrant of the abdomen. Electrocardiogram (EKG) showed a normal sinus rhythm with no ischemic changes. Laboratory investigations disclosed elevated liver function tests (LFTs) with ALT: 437 U/L (normal range: 5-40 U/L), AST: 727 U/L (normal range: 5-40 U/L), Total Bilirubin: 3.70 mg/dL (normal range: 0.2-1.2 mg/dL), and Direct Bilirubin: 1.50 mg/dL (normal range: 0-0.5 mg/dL). Other investigations, including cardiac markers (Troponin I), were within normal limits.

Upon further inquiry into the patient's medical history related to liver function, it was revealed that the patient had consumed mallow weed that he had personally gathered during his evening meal and had not ingested mushrooms or any other medication. Additional tests, including coagulation studies and hepatitis markers, were within normal limits.

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The patient was admitted to the Gastroenterology service with a diagnosis of toxic hepatitis.

Discussion

While the botanical names for mallow are Malva neglecta Wallr and M. sylvestris L.3, it is referred to by various regional names such as "kömeç" and "tolik." Locally, it is believed to be effective in the treatment of mumps, rheumatic diseases, and tonsillar conditions. The plant is commonly boiled as a whole and applied as a poultice to the affected area after being prepared into a paste, which is then wrapped. Additionally, the local community incorporates mallow in salads and various dishes. The flower and leaves of the plant are also boiled, strained, and the resulting liquid is either consumed directly or mixed with honey after being dried4. In our case, mallow was consumed in the form of a cooked dish, equivalent to one portion.

Mallow is utilized in traditional medicine for the treatment of various conditions, including hypertension, atherosclerosis, and liver diseases. The flowers of the plant contain a variety of compounds such as flavonol glycosides, gossypitrin, missetin, quercetin, luteolin glycoside, anthocyanin, sabdaretin, hibisketrin, luteolin, luteolin glycoside, flavonoid, and chlorogenic acid. Among these, polyphenols, anthocyanins, and flavonoids exhibit antioxidant effects by scavenging free radicals and reactive oxygen species, inhibiting xanthine oxidase, enhancing antioxidant enzyme activity, and reducing lipid peroxidation[3].

Several studies have reported the antihypertensive effects of mallow. This effect has been linked to vasodilation and diuretic effects, inhibition of calcium entry, blockade of angiotensin 1 (AT1) receptors, and ACE inhibition[3].

In various studies utilizing extracts derived from the flowers, leaves, and seeds of mallow, it has been observed that it reduces oxidative stress and eliminates free radicals. Additionally, its antioxidant activity and anti-apoptotic effects have been reported to protect cells from cytotoxicity[3]. It was determined that there was no specific therapeutic intent in the ingestion reported in our case.

Mallow, in its infusion form and extract, has been traditionally used in medicine and as a food source for an extended period, generally considered safe. The limited information available in the current literature supports this. No cases of side effects or poisoning have been reported following oral consumption of mallow in the existing literature[3].

Despite all the reported hepatoprotective and antioxidant effects of mallow, the elevation in liver function test values in our case is quite remarkable and contradicts the information available in the current literature.

In the literature, it has been demonstrated that mallow is safe and not toxic at doses below 200 mg/kg[3]. Based on the statements of the patient and their relatives, we believe that the intake in our case, with an approximate weight of 80 kg, did not exceed this toxic threshold.

A study conducted by Aktürk et al. investigated the knowledge of medical students regarding plant identification, revealing that mallow was one of the least known plants among the students[5]. As clinicians who greeted, assessed, and managed the patient, we initially did not consider that mallow could have a toxic effect. In this regard, we share the belief that both medical students and healthcare professionals, particularly regarding medicinal and traditionally used aromatic plants, may lack sufficient knowledge in this field.

In a study investigating mallow's antimicrobial activities and product contamination, which is one of the reasons for its use in folk medicine, it was observed that mallow obtained from the herbalist had little effect against the tested standard and clinical strains. Additionally, the study revealed that mallow, especially, harbored microorganisms above the limit of 10^2 cfu/mg. These organisms were identified as Coagulase-negative Staphylococcus species, Enterobacteriaceae species, and Pseudomonas aeruginosa6. In another study conducted by Kara et al., it was reported that mallow was effective against H. pylori, Bacillus subtilis, and K. pneumoniae but not effective against Enterobacter cloacae, P. aeruginosa, and Candida albicans[3]. The presence of numerous aerobic bacteria and fungi on mallow suggests a potential risk of health issues for those using these plants. However, in our case, we do not consider the acute hepatotoxicity to be of microbial origin.

Conclusion

Despite the well-known hepatoprotective and antioxidant effects of mallow, the reasons for causing hepatotoxicity in our patient remain unclear and could not be definitively identified by us, contrary to the information in the literature. It is possible that our patient may have ingested a different plant, mistakenly thinking it was mallow, or that other wild/toxic plants may have been mixed in with the known mallow. Nevertheless, even a plant that can be characterized as safe and liver-friendly should be kept in mind by clinicians that, albeit rarely, it may exhibit contrary effects in some individuals.

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