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A Life-threatening Cup of Tea: A Case Report and Literature Review

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Abstract

Herbal teas have been ingrained in traditional practices, particularly in traditional Chinese medicine, for many years. Despite their global popularity and widespread use, there is a notable absence of comprehensive studies elucidating the mechanism of action and potential adverse effects associated with these medicinal herbs. We present the case of a male in his early 50s who consumed an herbal tea called "Tapee tea" which is marketed to alleviate musculoskeletal pain and is available for purchase on various online platforms. He presented to the hospital due to melanic stools and was subsequently diagnosed with a large duodenal peptic ulcer which was further complicated by hemorrhagic shock and cardiopulmonary arrest. Our aim is to create awareness for the public to exercise caution before purchasing products regarded as "natural" supplements. Healthcare professionals, including physicians and mid-level providers, should adopt a comprehensive approach to patient assessment, including history-taking that includes medication reconciliation of over-the-counter dietary supplements when constructing a differential diagnosis. This approach ensures a well-informed and vigilant stance towards the potential risks associated with herbal product consumption.

Keywords: Tapee tea, Hemorrhagic shock, Massive transfusion protocol, Duodenal ulcer, Case

1. Introduction

Medicinal herbs have been used by humans for various disorders since prehistoric and ancient times. Numerous scientific research has demonstrated the health benefits of herbal remedies and other alternative medications derived from food or natural sources. However, recent reports from various monitoring and scientific studies have revealed the presence of synthetic medications that have not been stated in herbal remedies and nutritional supplements.¹ Our case presents an incident of serious adverse effects in a patient after consumption of herbal tea adulterated with synthetic medication.

2. Case discussion

A male in his early 50s, with a history of right meniscal tear and ongoing physical therapy, presented to the emergency department (ED)

exhibiting abdominal pain and multiple episodes of melena of one-day duration. His symptoms were accompanied by lightheadedness, palpitations, and a loss of appetite. He was using consuming a Thai herbal tea called "Tapee tea" for pain relief. Upon arrival to the ED, the patient was alert and oriented, blood pressure of 112/63 mmHg, heart rate of 80 beats per minute, temperature of 36.7 C, SpO₂ of 98% on room air, with a hemoglobin of 8 g/dl. He was evaluated by a gastroenterology specialist and underwent an Esophagogastroduodenoscopy (EGD) on day 2. The EGD revealed a large clean-based ulcer at the duodenal bulb, with a nonbleeding visible vessel and oozing from the edges [Fig. 1]. The edges were treated with argon plasma coagulation (APC), and biopsies for *Helicobacter pylori* were taken which came back negative. Despite the procedure, he continued to experience episodes of melena, leading to a repeat EGD on the fifth day, displaying the same duodenal ulcer with overlying blood clot and signs of recent bleeding [Fig. 2].

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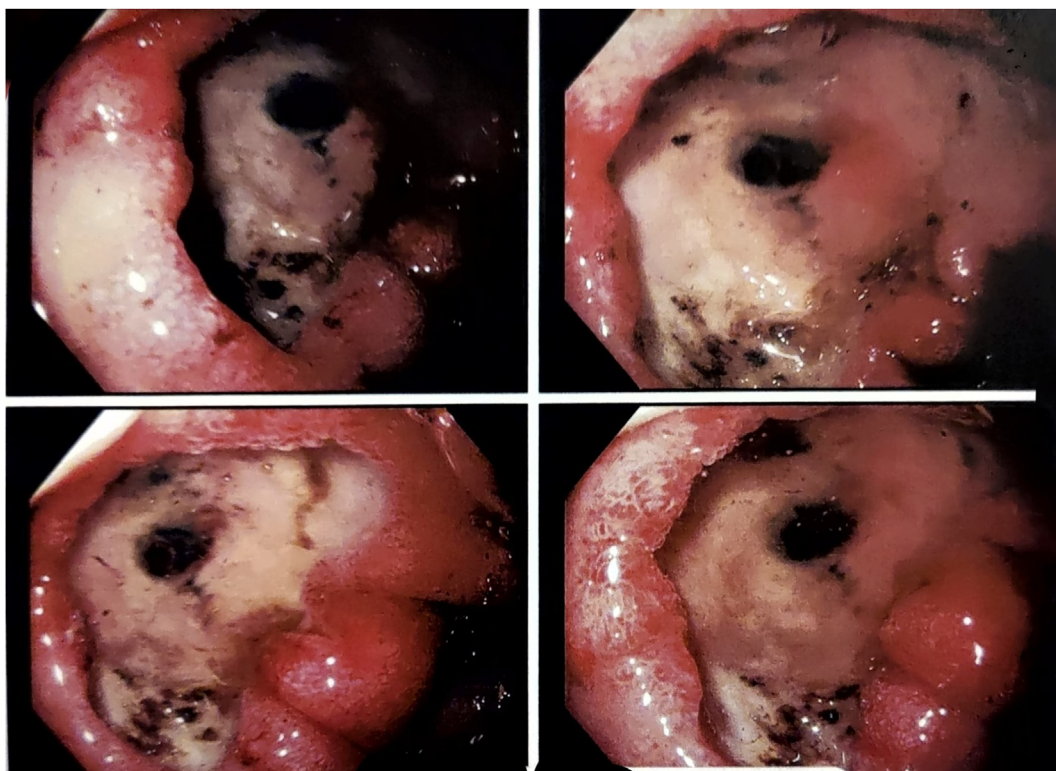


Fig. 1. EGD revealed a large clean-based ulcer at the duodenal bulb, with a nonbleeding visible vessel and oozing from the edges.

Treatment involved injection of 8 ml of epinephrine and cauterization with APC. Despite further treatment, the patient continued to have episodes of melena, and required multiple blood transfusions to maintain a hemoglobin above 7 g/dl. On the 11th day, the patient suffered cardiac arrest, likely secondary to hemorrhagic shock, achieving return of spontaneous circulation (ROSC) after 2 cycles of cardiopulmonary resuscitation (CPR). Following intubation and sedation, he was transferred to the Medical Intensive Care Unit (MICU).

In the MICU, the patient was started on massive transfusion protocol, as well as vasopressor support with norepinephrine, epinephrine, and vasopressin to maintain a Mean Arterial Pressure (MAP) above 65 mmHg. Laboratory findings indicated signs of disseminated intravascular coagulation (DIC), including Fibrinogen 91 mg/dl (Normal 200–400 mg/dl), PT 19.1, PTT 139, D-dimer 12.83. Post-arrest hemoglobin was found to be 2.6 g/dl, and a nasogastric tube drained approximately 2 L of sanguineous fluid from the stomach. The patient was taken to the operating room (OR) emergently where he underwent exploratory laparotomy with ligation of the gastroduodenal artery, distal gastrectomy, and gastrojejunostomy. Throughout his hospitalization, he required over 30 units of packed

red blood cells (PRBC), 10 units of platelets, 40 units of cryoprecipitate, and 20 units of fresh frozen plasma.

His hospital course was complicated by acute renal failure and enterococcus faecalis bacteremia treated with continuous renal replacement therapy (CRRT) and broad-spectrum antibiotics, respectively. Despite these challenges and a protracted hospital stay, the patient achieved near-complete recovery and was transferred from the ICU to a long-term acute care facility (LTAC) before being discharged home in stable condition.

3. Discussion

The practice of employing medicinal herbs dates as far back as prehistoric and ancient times. Around 3000 B.C. notable civilizations such as the Egyptians and Greeks predominantly utilized various botanical remedies including substances like myrrh and opium.² In contemporary times, the tradition of incorporating herbal remedies has evolved, and a significant portion of these botanical substances is now commonly infused into teas.

Tea powder is obtained from the leaves of the bush, *Camellia sinensis*. Herbal teas are different from true tea in that they are not derived from the

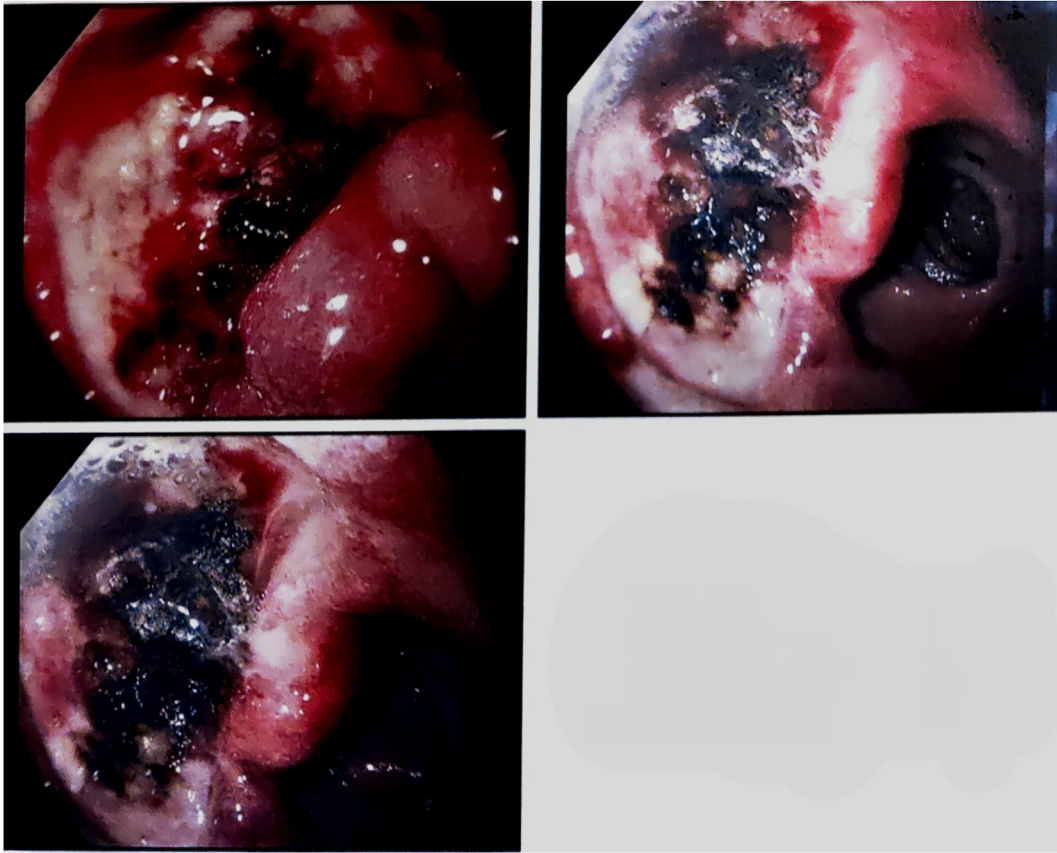


Fig. 2. EGD on the fifth day, displaying the same duodenal ulcer with overlying blood clot and signs of recent bleeding.

leaves of *C. sinensis*, but sourced from various plants (e.g., blossoms of linden, leaves of peppermint, fruits of hibiscus).³ Tapee tea is an herbal tea marketed as Thai natural organic herbal tea on www.tapeetea.com, coconutislandco.com, and other online stores. This product is promoted and sold for the relief of gout, muscle aches, stomach cramps, period pains, and body aches as well as to boost immunity. The main ingredients listed for this herbal tea include 20% jewel vine, 20% java tea (also known as cat's whiskers), 10% wolfberry, and 10% sea holly. Other ingredients listed include ginseng, sandalwood, cardamom, nutmeg, cinnamon, elephant grass, lovage, orange blossom, kaempferia galanga, and Saul waeng.^{4,5}

D. scandens, specifically, exhibits anti-inflammatory effects by reducing myeloperoxidase release and inhibiting leukotriene B₄, making it a valuable remedy for arthritis pain.^{6,7} Studies indicate that *D. scandens* can be used synergistically with reduced doses of NSAIDs to alleviate musculoskeletal pain while minimizing NSAID-related side effects.⁸ Java Tea (*Orthosiphon stamineus*) has revealed its potential to mitigate articular cartilage degradation, inflammation and, collagenase activity in rat models.⁹

Wolfberry (*Fructus barbarum* L) has been recognized for its richness in essential vitamins, minerals and antioxidants such as vitamin A and C, as well as iron and potassium.¹⁰ Sea Holly (*Eryngium maritimum* L) possesses antimicrobial, antioxidant, hepatoprotective, and anti-inflammatory properties, that have been deeply rooted in traditional Chinese medicine for numerous years.¹¹

In addition to these medicinal herbs, laboratory analysis by the Food and Drug Administration (FDA) confirmed that "Tapee Tea" also contains dexamethasone and piroxicam which are not shown on the product label. The FDA released a warning to inform the public against the consumption of Tapee tea due to these hidden drug ingredients.¹² Piroxicam is a well-known NSAID utilized globally to effectively treat musculoskeletal conditions.¹³ NSAID use is linked to a wide range of unfavorable effects on the hepatic, renal, cardiovascular, dermatologic, and most prevalently gastrointestinal (GI) systems. Common symptoms include dyspepsia, heartburn, or more critically, peptic ulcer disease (PUD) with potentially fatal bleeding and perforation.¹⁴ The two main mechanisms by which NSAIDs produce gastroduodenal damage are physiochemical breakdown of

the gastric mucosal barrier and systemic inhibition of gastric mucosal protection through the reduction of the GI mucosa's cyclooxygenase (COX, PG endoperoxide G/H synthase) activity.¹⁵

Dexamethasone is a potent glucocorticoid that acts by suppressing neutrophil and lymphocyte migration and inhibiting inflammatory molecules such as interleukins, prostaglandins, and cytokines. When given in high doses, it carries side effects such as insomnia, weight gain, agitation, adrenal and immune suppression, electrolyte disturbances, and hepatotoxicity.¹⁶

Upon review of the literature, there has been no documentation on the serious adverse effects that may occur secondary to Tapee tea consumption. The patient under consideration was consuming one tea packet daily for approximately 8 weeks. Each tea bag contains 6g of tea which is mixed in about 250–350 ml of water. The exact amount of these potent medications present in the tea is unspecified, making it challenging to ascertain the exact dose of medications consumed if ingested daily. Additionally, he had no prior history of PUD, and a careful review of his medications revealed no other drugs that could have potentially contributed to his condition. While there are existing studies on the medicinal herbs found in the tea, there remains a lack of comprehensive research leading to FDA approval, which would establish their safety for consumption. Consequently, the safety profile of these herbal components, particularly in the context of daily intake, warrants further investigation.

While herbal teas are globally popular, the health benefits of medicinal herbs remain inadequately studied, and their complete ingredient profiles are frequently unknown. Patients must exercise caution when purchasing or ingesting medicinal herbs regarded as “natural” supplements. On the same note, medical providers should consider over-the-counter supplements and herbal remedies within the differential diagnosis, especially when confronted with acute conditions such as gastrointestinal bleeding, during hospital presentations. This comprehensive approach ensures a thorough consideration of potential contributors to patient health issues, emphasizing the importance of a cautious and informed approach to both the public and healthcare providers.

Conflicts of interest

The authors have no conflicts of interest to declare. All co-authors have seen and agree with the contents of the manuscript and there is no financial interest to report.

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