CASE REPORT

An unusual cause of acute abdomen and acute renal failure: Djenkolism

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Abstract

The djenkol bean (*Archidendron pauciflorum*) is a native delicacy in Southeast Asia, though consumption can sometimes lead to djenkolism. Clinical features of djenkolism include acute abdominal pain, hematuria, urinary retention, and acute kidney injury (AKI). The pain can be severe, which often leads to a misdiagnosis of acute abdomen. In this paper, we report the case of an Indonesian migrant with djenkolism. Due to the short history and severity of the abdominal pain, medical professionals suspected acute abdomen and proceeded with a negative exploratory laparotomy. However, djenkolism was suspected once relatives informed the professionals that the patient had consumed djenkol beans hours earlier. The patient recovered through aggressive hydration and urine alkalinization with bicarbonate infusion. We highlight the importance of being aware of this rare cause of AKI, especially in Southeast Asia, in order to provide early diagnoses and prompt treatments.

Introduction

The djenkol bean, or jering (Archidendron pauciflorum), is a native delicacy in the Southeast Asian countries of Indonesia, Thailand, Malaysia, and Myanmar. Djenkolism sometimes occurs, albeit infrequently after ingesting djenkol beans; clinical features include acute abdominal pain (especially suprapubic or flank pain), hematuria, urinary retention, and acute kidney injury (AKI). The acute presentation of the abdominal pain can mimic acute abdomen, resulting in misdiagnoses and unnecessary interventions. In this paper, we report the case of an Indonesian migrant with djenkolism who was suspected to have acute abdomen and underwent a negative exploratory laparotomy. The patient recovered through aggressive hydration and urine alkalinization with bicarbonate infusion.This paper reports the case of an infant with kwashiorkor stemming from improper weaning which was overlooked.

Case Presentation

A 45-year-old Indonesian man with no history of medical illness arrived at an emergency department with acute colicky lower abdominal pain that started two hours prior. The pain was accompanied by gross hematuria and urinary retention. A physical examination revealed tenderness in the suprapubic and bilateral costovertebral regions. His vital signs were blood pressure 160/110mmHg, heart rate 114 bpm, and afebrile. A laboratory investigation revealed an elevated white cell count of 15.3x10^9/L, a hemoglobin count of 13.2gr/dL, a platelet count of 301x10^9/L, an elevated urea level of 11.1mmol/L(2.5-7.1mmol/L), and a creatinine level of 282mmol/L(60-110mmol/L). An abdominal radiograph (KUB) did not show any urological stones or free air.

He was admitted to the urology service for suspected renal stones. He was treated with intravenous hydration, analgesics, and antibiotics. An urgent computed tomography (CT) was taken of the patient's abdomen; it revealed mild ascites and no hydronephrosis. A microscopic examination of the patient's urine revealed amorphous crystals. The patient's symptoms continued to become more severe; the level of abdominal distension, tenderness, and guarding exceeded that seen in cases of ureteric colic. In view of the rapidly worsening symptoms, the medical professionals suspected a sealed perforated viscus. After discussing with the patient and his family, they decided to proceed with an exploratory laparotomy. However, this only showed a fecally loaded right colon and a small number of ascites without any bowel perforations.

A family member later revealed that the patient had consumed a plateful of fried djenkol beans five hours before his pain started. With this insight, the patient was treated for djenkolism with intensive hydration and a urine alkalinization using bicarbonate infusion with a pH aim of >7. His kidney function improved gradually over five days, alongside the resolution

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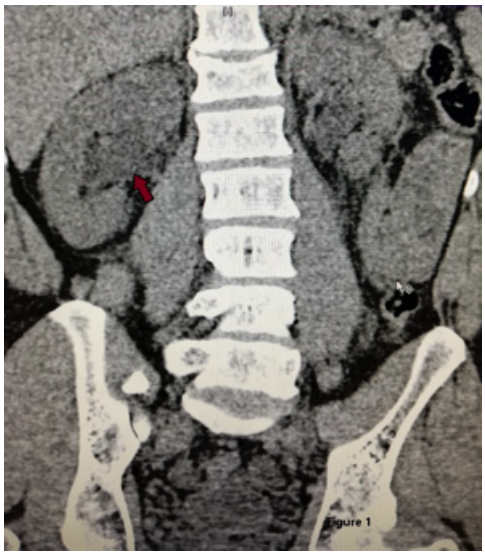
of his hematuria. A retrospective review of his abdominal CT scan reveals mild hydronephrosis of the right system, with crystal deposit in the left ureter (**Figures 1 & 2**).



Figures 1: Red arrow points to dilated pelvic calyces of the right kidney, consistent with signs of right hydronephrosis.

Figures 2: Red arrow points to a left ureteric crystal deposit.

Case Discussion

Djenkolism is an uncommon clinical result of djenkol bean consumption that occurs sporadically. Djenkolism is typically reported in Southeast Asia, where the djenkol tree is a native plant. However, the onset of globalization and the ease of modern travel will likely boost the rate of cases elsewhere. Djenkolism is a predominantly male issue with a male-to-female ratio of 7:1.[1] The number of cases rises during rainy season (September to January), coinciding with the blooming of the djenkol tree.[1,2]

Djenkol beans contain a large amount of djenkolic acid (0.3–1.3 gm/100gm wet weight), and 93% of it exists in a free state.[2,3] In most cases of djenkolism, patients have consumed a large amount of djenkol beans. One study in Thailand reported a higher incidence of hematuria in children long-term djenkol bean-consumption patterns.[4] Preventive measures for djenkolism are lacking, largely because the incidence is low and sporadic. However, one study proposed boiling djenkol beans in dilute alkali to remove the djenkolic acid prior to consumption.[5]

The pathogenesis of AKI from djenkol beans is not well understood. However, it is thought to occur due to either hypersensitivity or a direct toxic effect of djenkol bean metabolites resulting in AKI and/or urinary tract obstruction by djenkolic acid crystals, sludge, and/or possible ureteral spasms. In most severe cases, this could cause post-obstructive renal failure.[6] The pain stems from ureteric colic from crystal precipitation and stones. However, as in our case, the severity of the pain can exceed that seen with ureteric colic; the pain may be a more severe form of ureteric colic.

The two main clinical syndromes of djenkolism are characterized as follows: a) mild presentation of flank/suprapubic pain and hematuria resulting from transient ureteral obstruction due to djenkolic acid crystal; and b) severe presentation in which pain and hematuria are accompanied by hypertension, oliguria, and azotemia.[7] Our patient belonged to the latter syndrome which, in some of the most severe cases, leads to anuria and even death.[8] The syndrome is likely determined by the amount of djenkol beans consumed.

Regardless, early recognition is of the utmost importance. Therefore, awareness of the potential consequences of djenkol beans and inquiry into patients' djenkol bean-consumption patterns are very important in general practice. The mainstay of treatment for djenkolism is aggressive hydration and alkalinization of the urine in order to clear the crystal and relieve pain. In severe cases, renal replacement therapy may be required. Our patient recovered within five days of aggressive hydration and alkalinization of the urine using bicarbonate infusion, though he did also go through a negative laparotomy. However, there are reports of surgical interventions being used to relieve obstruction caused by the crystal, sludge, or calculi.[6,9]

Our case is interesting in that acute abdomen was suspected and the patient received an exploratory

laparotomy. The symptoms were severe and exceeded the severity of those of ureteric colic. In our case, there were two missteps that led to an unnecessary laparotomy: (1) incomplete history taking of djenkol bean consumption (2) improper review of the initial abdominal CT scan. This makes sense, as the consumption of djenkol beans is quite common and is generally innocuous; djenkolism only occurs in rare circumstances. Its occurrence probably depends on the amount of djenkol beans consumed. Furthermore, most public and healthcare professionals are unaware of the problematic association.

Conclusion

It is important to keep uncommon causes in mind when evaluating patients with symptoms of acute abdomen in order to avoid unnecessary invasive interventions. Djenkolism is a prime example of such an uncommon cause, typically the resultant pain is consistent with ureteric colic pain. Inquiry into patients' djenkol bean-consumption patterns is crucial when defining symptoms of djenkolism are seen.

How does this paper make a difference to general practice?

- It recognizes various potential causes of colic abdomen.
- It recognizes various potential causes of hematuria.
- It emphasizes history taking as a tool of the utmost importance to avoid diagnosis delays and unnecessary invasive interventions.

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