Case Report

Acute kidney injury, oral mucositis and gastritis as complications of ingestion of papaya leaf juice extract in a patient presenting with dengue fever

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Abstract

The use of crude leaf preparations from *Carica papaya* for increasing platelet count in patients with dengue fever is a popular self-treatment that is increasingly being observed recently. We report the case of a 62-year-old male who presented to our outpatient department for the evaluation of 4-day fever. In hospital diagnostic testing revealed dengue NS1 antigen enzyme-linked immunosorbent assay was positive, thrombocytopenia (platelet count 66,000/mm^3), normal serum creatinine (0.96 mg/dl). Thereafter, since he was told that he was diagnosed to have dengue fever with thrombocytopenia, as per the advice given by a neighbour, he had consumed juice extracted from papaya leaves to 'increase the platelet count.' Six hours after ingestion, he had developed severe mucositis of oral cavity and severe gastritis, vomiting and loose stools. He became drowsy and irritable. Arterial blood gas analysis revealed mild metabolic acidosis, serum creatinine increased to 3.69 mg/dL. He was treated symptomatically with intravenous fluids and was carefully monitored in-hospital. Over the next 2 days, fever subsided, serum creatinine and platelet count became normal and he was discharged in a stable condition. The present case highlights the life-threatening complications that can result with the use of papaya leaf extract in the self-treatment of dengue fever.

Keywords: Acute kidney injury, *Carica papaya*, dengue fever, leaf extract, oral mucositis, treatment

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INTRODUCTION

Injudicious use of herbal medications in the commoner's household for mild ailments is a routine practice worldwide. There are a huge number of herbs that are useful in diseased condition. *Carica papaya* and its leaves are used in many disease conditions.[1] The use of papaya leave extracts, in dengue fever, for elevating platelet count, is a popular therapy that is increasingly observed.[2]

Viral fevers are sometimes deadly as the therapeutic options for them are limited. Dengue fever can sometimes have fatal outcomes due to fall in platelet count, dehydration and dengue haemorrhagic shock syndrome. The present case highlights the life-threatening complications that can result with the use of papaya leaf extract in the self-treatment of dengue fever.

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CASE REPORT

A 62-year-old male presented to our outpatient department for the evaluation of 4-day fever. Initially, platelet count was 66,000/mm^3, serum creatinine was normal (0.96 mg/dL) and he had tested positive for NS A1 antigen. He was informed that he had dengue fever with thrombocytopenia and was given symptomatic treatment, reassured and advised to review after 3 days. After returning home, on the advise of a neighbour, he had consumed juice extracted from papaya leaves to 'increase the platelet count.' Six hours after ingestion, he developed several bouts of vomiting, loose stools and was brought to the emergency service. At the time of initial presentation, the general physical examination revealed blood pressure 90/60 mmHg, pulse 78 beats/min and respirations 28/min; he was drowsy and irritable. Severe mucositis of the oral cavity [Figure 1] was evident. There was no focal neurological deficit. In view of declining mental status, he was immediately shifted to the medical intensive care unit (MICU) for further management.

Figure 1: Clinical photograph obtained 6 h after ingestion of *Carica papaya* leaf extract showing severe oral mucositis

Laboratory investigations at admission were as follows: spot sugar = 132 mg/dL, serum sodium 126 mmoL/L and serum potassium 4.2 mmoL/L. Arterial blood gas analysis revealed mild metabolic acidosis. During the in-hospital stay, his urine output reduced and serum creatinine increased to 3.69 mg/dL over the next 24 h suggestive of acute kidney injury (AKI). In the MICU, he was treated symptomatically with intravenous crystalloid fluids and was carefully monitored. Subsequently, over the next 2 days, fever subsided, serum creatinine decreased to 1.02 mg/dL, serum sodium was 144 mmol/L, serum potassium was 4.8 mmol/L and platelet count became normal. He was discharged from the hospital in a stable condition.

DISCUSSION

With the advent of modern allopathic medicine and scientifically proven treatment availability, lot of discussions are going on regarding the beneficial effects of herbal medicine in various disease conditions. The caseload of dengue is very high globally, especially in overly populated countries such as India. Dengue still remains endemic in more than 100 countries, affecting more than half of the world population.[3] As there is no specific therapy available for dengue fever, researchers are trying for newer treatments. In Asia, many herbal medicines are used for the treatment of dengue. Four of them showed promising results, namely *Cissampelos pareira Carica papaya*, *Azadirachta indica* and *Hippophae rhamnoides*.[4]

Carica papaya is a rich source for many anti-oxidants and is abundant of many nutrients and enzymes. All the plant parts, including roots, leaves, leaf extracts, fruit and seeds, are having therapeutic value. It is thought to be beneficial in many diseases such as dengue, malaria, colon and prostate cancer among others.[1] Dengue fever is one of the viral haemorrhagic fevers that occur in tropical climates. Patients present with high-grade fever, retro-orbital headache, joint pains, rash and bleeding manifestations. There will be a significant fall in the platelet count with bleeding manifestation, and sometimes, the patient may go into shock resulting in dengue shock syndrome. *Carica papaya* leaf extract has probable beneficial properties in dengue fever to bring about a rapid increase in platelet count. This could be possibly attributed to its membrane-stabilising property, the flavonoids and other phenols present in the extract have been suggested to provide the beneficial effects.[1] Papaya also is useful in preventing haemolysis caused by heat and hypotonicity.

Although *Carica papaya* extract has many positive effects; several adverse effects have also been known to occur. *Carica papaya* is known to cause skin irritation, oral mucositis, gastritis, respiratory distress, skin discolouration, abortifacient effects and others. There are only very few case reports and less research material available about the side effects of *Carica papaya*. The present case documents the occurrence of adverse events, such as oral mucositis and AKI with *Carica papaya* leaf extract consumption. Papaya latex is known to have irritant properties and may have resulted in mucositis, gastritis. The papain and high fibre are also attributed in the causation of gastrointestinal upset.

Nephrotoxicity with herbal remedies is common in all parts of the world. Aristolochic acid, Djenkol bean, *Callilepis laureola* and herbs containing heavy metals and many others are known to cause nephrotoxicity.[5] There has been sparse previously published literature regarding nephrotoxicity due to *Carica papaya* leaf extract.[1] Our patient suffered

from AKI just after 6 h of ingestion of the *Carica papaya* leaf extract. The causes of AKI in this patient could be multifactorial: (i) papaya leaf juice could have caused severe mucositis and gastritis leading to severe dehydration causing pre-renal AKI; (ii) direct toxicity of papaya leave extract on the kidney and (iii) due to the co-existing dengue infection.[6]

Toxic renal injuries secondary to herbal medication are still common in India, so creating awareness is, therefore, necessary to educate the public about dangers posed by herbal remedies. The present case highlights the life-threatening complications that can result with the use of papaya leaf extract in the self-treatment of dengue fever.

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Conflicts of interest

There are no conflicts of interest.

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