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Case Study

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A CASE REPORT ON AVERRHOA BILIMBI INDUCED ACUTE OXALATE NEPHROPATHY

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ABSTRACT

Bilimbi is a fruit with several therapeutic applications that is frequently used. However, because of its high oxalate concentration, it can affect the life of the people. This case focuses on judicious use of this fruit and the awareness that healthcare professionals should create among the people to avoid nephrotoxic effects of this fruit.

KEY WORDS: Averrhoa Bilimbi, Acute Kidney Injury, Acute oxalate Nephropathy.

INTRODUCTION

Averrhoa bilimbi is cultivated in many tropical and subtropical countries all over the world, principally for fodder and medicinal purposes.[1] The initial stage in the development of oxalate nephropathy is the formation of calcium oxalate crystals in the lumen of proximal tubules, which is followed by their adhesion to the surface of tubular epithelial cells. Oxalate nephropathy can also be carried via calcium oxalate-binding proteins. Inflammasomes are huge multi molecular cytosolic complexes that create a platform for pro-inflammatory caspase-1 activation. Inflammasomes have critical roles in apoptosis, interstitial inflammation, and fibrosis in numerous forms of renal illness. The nucleotide-binding domain, leucine-rich repeat inflammasome (NALP3 or NLRP3), is crucial in the setting of oxalate nephropathy. NALP3 proteins oligomerize and form a protein complex with caspase-1 when activated. In oxalate nephropathy, this mechanism activates caspase-1, which cleaves the inactive precursors of IL-1 and IL-18 to produce active cytokines that increase interstitial inflammation and fibrosis, as well as the development of renal failure.[2] When excessive fruit is consumed, it may raise blood oxalate levels, resulting in the formation of calcium oxalate crystals in the renal tubules which ultimately leads to Acute Kidney Injury (AKI) . Freshly prepared concentrated juice has a high concentration of oxalic acid, and ingestion increases the risk of developing an acute kidney.[3]

CASE REPORT

A 65-year-old male patient presented with low back pain and decreased urine output for two days. He is a known case of Type 2 Diabetes Mellitus and Hypertension for the past 10 years and he is recently diagnosed with Benign Prostatic Hyperplasia (BPH). On examination his Blood Pressure was 120/80 mmHg, Pulse rate was 78 beats/min and Respiratory rate was 20 breaths/ min. He also had Pedal edema and chest crepitation's (+). His Investigations were as follows:

SL.NO	PARAMETER	VALUE
1	Hemoglobin	14.9 mg/dl
2	Urea	25 mg/dl
3	Potassium	4.8 mg/dl
4	Creatinine	5.39 mg/dl
5	Sodium	129 mg/dl

His Urine Routine Examination shows

Color	Pale Yellow
Appearance	Slightly Cloudy
Urine Albumin	2+
Leucocytes	1+
Blood (RBC)	3+
Urine pH	5.5
Micro - Pus	40-45
Micro-Epith Cells	1-2
Micro - RBC	Numerous
Micro - Bacteria	Present
Microscopy-Crystals	Nil
Microscopy-Cast	Nil

An ultrasound of abdomen was performed in view of this situation, and it revealed a modest non-obstructive right renal calculus measuring 0.3 cm in the right lower calyx, as well as bilateral bulky kidneys with fat stranding. As a result, a tentative diagnosis of Acute Kidney Injury was made, although the cause of the condition was unknown. The disease clinical pattern suggested Acute Interstitial Nephritis. His medication history was taken into account, but there is no common drug that would cause the illness. As a result, the patient was inquired about Averrhoa

Bilimbi juice, as it is a popular custom in Kerala to use Averrhoa Bilimbi juice for the control of Diabetes and Hypertension. He admitted to consuming about 300 ml of concentrated Bilimbi juice one day before the commencement of the symptoms. As his pedal edema deteriorated, he was started on Hemodialysis for two sessions using femoral dialysis catheter. He was eventually diagnosed with Acute Oxalate Nephropathy. The patient's renal function improved significantly after three days. His creatinine was 4.5 mg/dl at the time of discharge; however, when he came for follow-up, it had declined to 1.2 mg/dl, and he had been instructed to have routine nephrology follow-up.

DISCUSSION

Due to bilimbi's high oxalate content, which leads to intra tubular oxalate crystal deposition, and further in the development of acute oxalate nephropathy and can also cause acute kidney injury when given in greater quantities. Higher concentrations can have a more detrimental effect on renal function. Dehydration and an empty stomach may increase the risk of kidney damage.[4] The decoction of the leaves of Averrhoa Bilimbi is used to treat diabetes, and its fruit is frequently used to treat hyperlipidemia, hypertension, and diabetes hence careful monitoring is needed.[5]

CONCLUSION

Averrhoa bilimbi is a fruit that has numerous therapeutic applications, but it should be used with caution since large doses can be nephrotoxic and have an adverse effect on the patient's quality of life. As a result, patients must be aware about the hazards of drinking bilimbi juice. Furthermore, timely therapy for these individuals may prevent the advancement of their ailment in the future.

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CONFLICTS OF INTEREST

There are no conflicts of interest.

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