Case report

A Rare Case Series on Cefoperazone Sulbactam induced Uremia: A matter of concern and awareness.

ABSTRACT

Uremia is a clinical syndrome marked by elevated concentrations of urea in the blood and associated with fluid, electrolyte and hormone imbalances and metabolic abnormalities. Cefoperazone + sulbactam is a combination of two medicines: cefoperazone and sulbactam. Cefoperazone is an antibiotic. It works by preventing the formation of the bacterial protective covering which is essential for the survival of bacteria. Sulbactam is a beta lactamase inhibitor which reduces resistance and enhances the activity of cefoperazone against bacteria. The authors report three cases of isolated cefoperazone sulbactam induced uremia in patients without chronic kidney disease (CKD).

INTRODUCTION

Uremia more commonly develops with chronic kidney disease (CKD), especially the later stages of CKD, but it also may occur with acute kidney injury (AKI) if loss of kidney function is rapid. Urea itself has both direct and indirect toxic effects on a range of tissues. A number of substances with toxic effects, such as parathyroid hormone, beta-2 microglobulin, polyamenes, advanced glycosylation end products, and other middle molecules, are thought to contribute to the clinical syndrome.

Cefoperazone, a third generation cephalosporin antibiotic, is widely used in clinical practise for the treatment of various bacterial infections. While effective in targeting and eliminating bacterial pathogens, like any medication, cefoperazone is not without its potential side effects. One rare but severe complication associated with cefoperazone use is the development of uremia.

Cefoperazone induced uremia possess a significant challenge to health care providers, as it requires prompt recognition and management to prevent further complications.

CASE PRESENTATION

CASE 1

A 62 year old male patient with past medical history of diabttes mellitus and on medication, arrived with complaints of sudden onset of lower body ache and right sciatica since 10 days. On systemic examination, patient was found to be best forward and more comfortable when seated. Straight leg raise test showed 45 degree for right leg. MRI showed bone spurs and tissues associated with arthritis of the spine between L4 and L5. The final diagnosis revealed prolapsed, herniated or extruded intervertebral disc (PIVD) between L4-L5 with sub ligamental extrusion.

Laminectomy and dissection was done for the patient. Laboratory investigations revealed normal values for urea (37 mg/dl) and serum electrolytes(sodium-137mEq/l) on the day of admission. However , during the course of admission in the hospital the patient was prescribed with inj. Cefoperazone and sulbactam for 6 days. Following administration, there found to have a spike in the urea level (48mg/dl) and decreased serum electrolytes (Na- 131mEq/l).

CASE 2

A 67 year old male patient with past medical history of COPD, HTN and type 1 respiratory failure arrived with complaints of breathing difficulty since 1 day, fever since 10 days, and cough. His past medication history includes tab cilnidipine 5 mg od, and levo salbutamol and ipratropium bromide as nebulisations as well as tab acebrophylline bd. On systemic examination, the patient was found to

have wheezing and acute exacerbation of COPD. The final diagnosis divulged COPD exacerbation, type 1 respiratory failure and systemic hypertension.

Laboratory ivestigations suggests normal urea level (27 mg/dl) on the day of admission. Following administration of inj. cefoperazone sulbactam for 6 days, there is an elevation of urea to 58 mg/dl. On stoppage of medication the urea level was checked, and was found to be normal.

CASE 3

A 87 year old female patient with no comorbidities except intermittent constipation, arrived to the hospital with altered sensorium since two days and bleeding for one day. On systemic examination, the patient was confused, restless, dehydrated, and pallor and icterus present. Per rectal examination indicated impacted stools with altered blood. The patient was diagnosed with chronic liver failure with hepatic encephalopathy and coagulopathy.

During the course of admission the patient was on inj. Cefoperazone sulbactam 2gm iv bd, tab Ursodeoxycholic acid, tab rifaximin 550 mg bd, inj. Pantoprazole 40 mg iv od and syp. Duphalac 30 ml tid. There was a drastic change in the urea level of the patient from the day of admission which is 30mg/dl to 55mg/dl after the intravenous administration of antibiotic cefoperazone sulbactam. The normal value of urea after the stoppage of cefoperazone sulbactam makes this drug a suspected agent for uremia.

DISCUSSION

Cefoperazone sulbactam is a combination antibiotic widely used in clinical practice to treat severe bacterial infections. While it is generally considered safe and well tolerated there have been rare reports of cefoperazone sulbactam induced uremia, a condition characterised by elevated blood urea nitrogen (BUN) and creatinine levels.

The clinical presentation of cefoperazone sulbactam induced uremia can vary widely. Patients may exhibit symptoms such as decreased urine output , fatigue, edema, hypertension, electrolyte imbalances, and altered mental status. Laboratory investigations typically reveal elevated BUN and serum creatinine levels , along with other signs of renal dysfunction. Timely recognition of these clinical features is crucial to differentiate cefoperazone sulbactam induced uremia from other causes of renal impairement.

The foremost priority is to discontinue the offending medication and ensure adequate renal perfusion. Supportive care measures , including correction of fluid and electrolyte imbalances maybe necessary . in severe cases , renal replacement therapy , such as hemodialysis or continuous renal replacement therapy, may be required to provide temporary renal support. Furthermore close monitoring of renal function and folloup investigations are essential to assess the reacovery of renal function and prevent long term complications.

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