Purple urine bag syndrome in chronic kidney disease

Sir,

Purple urine bag syndrome (PUBS) is a rare condition found in patients with chronic urinary catheterization, and is characterized by purple-colored urine, bags, or tubing. Patients with PUBS are typically women who have urinary tract infection, alkaline urine, and constipation[1] PUBS is usually reported in patients with bacteruria, with the strains expressing indoxyl sulfatase/phosphatase activity.[2] The cause of discoloration of urine is believed to be due to indigo (blue) and indirubin (red) or their mixture (purple).[3]

An 85-year-old male, a patient of obstructive uropathy secondary to stricture urethra, on continuous bladder drainage through a supra pubic urinary catheter, presented with uremic symptoms and purple color urine in the bag [Figure 1]. Evaluation revealed severe renal failure (blood urea 108 mg/dl, serum creatinine 7.2 mg/dl), pyuria, alkaline urine (pH 9), and *Pseudomonas aeruginosa* urinary tract infection. He was not a diabetic. He was on oral amlodipine, carvedilol for hypertension control, and calcium acetate as a phosphate binder. He was treated with parental cefoperazone and sulbactum for a week, based on the microbiological sensitivity, and within two days of initiation of the antibiotic, the urine color turned to pale straw from purple. Subsequently, he was supported with hemodialysis for renal failure.

Figure 1: Showing purple color urine

The chain reaction of PUBS begins with tryptophan from the food being metabolized into indole by the bacteria in the large intestine, and then the indole is absorbed into the portal circulation and converted into indoxyl sulfate by a series of detoxification transformations in the liver. After being excreted in the urine, indoxyl sulfate is digested into indoxyl by the enzyme sulphatase/phosphatase produced by certain bacteria. The common bacteria that have been reported are *Klebesiella pneumonia, Escherichia coli, Pseudomonas aeruginosa, Proteus mirabilis, Proteus rettgeri, Providencia stuartii, Morganella morganii, Enterobacter* species, *Enterococcus* species, and fecal *Streptococci*. Further indoxyl turns into indigo (blue) and indirubin (red) in the alkaline urine. The mixture of indirubin and indigo gives rise to a purple or blue color.[1,3,4] Several causative or associated factors such as old age, female gender, bed-ridden state, constipation, chronic urinary catheterization, urinary tract infection, alkaline urine, and plastic material of the bag or catheter were found to be involved in the development of PUBS.[1,3,4]

To conclude, our patient had *Pseudomonas* urinary tract infection and presented with PUBS. He responded to cefoperazone and sulbactum. He was also treated with dialysis for end stage renal disease.

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Conflicts of interest

There are no conflicts of interest.

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