

Purple Urine Bag Syndrome in an Elderly Woman

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HISTORY AND PHYSICAL EXAMINATION

A 77-year-old woman with a history of hypertension, cerebral vascular accident and neuropathic bladder has been followed at our urology clinic for periodic replacement of a urinary catheter. She presented with general fatigue and purple discoloration of the urine (Fig. 1). A review of her medications did not disclose any pharmacological agent that could cause urine discoloration. On physical examination, the patient was found to be afebrile, and some debris was found around the urethral meatus and within the catheter and drainage tube. Urinalysis was positive for leukocyte esterase and nitrites and revealed a pH of 7.0, >100 white blood cells per high-power field, 55-80 red blood cells per high-power field, and 2+ bacteria. A urine culture grew more than 100,000 colonies of *Proteus mirabilis*. A diagnosis of complicated urinary tract infection was established; the patient was treated with 500 mg oral cephalexin four times daily for 14 days. After receiving antibiotic treatment, the purple urine subsided.

DISCUSSION

Purple urine bag syndrome (PUBS) was first described by Barlow and Dickson in 1978. The unique clinical phenomenon is linked to the presence of indigo in the metabolism of tryptophan in the clinical setting of constipation. The indigo undergoes bacterial decomposition to indoxyl sulfate [1]. The host factor as well as the environment results in a chain reaction. The chain reaction accounting for PUBS begins with tryptophan from food, which is metabolized by bacteria in the intestine. These pathways produce indole, which is absorbed into the portal circulation and is converted into indoxyl sulfate by the liver. Indican, po-

tassium indoxyl sulfate, is then excreted in the urine and metabolized into indoxyl by several microbial species [2]. Thereafter, the oxidation of free indoxyl produces two main pigments, indigo and indirubin, which can dissolve in the plastic urine bag and result in the purple discoloration.

PUBS has been associated with multiple pathogens, including *Pseudomonas*, *Morganella*, *Proteus*, *Providencia*, *Klebsiella*, and *Enterobacter* species [3]. Gram-negative bacteria producing sulfatase and phosphatase are important in the pathogenesis [4].

Although PUBS is rare, it usually occurs in patients in geriatric wards and predominately affects females. The etiology of PUBS remains elusive. In conclusion, PUBS in our patient was related to urinary tract infection, and could be managed well with an adequate course of effective antimicrobial therapy. PUBS is a benign condition without major consequences. Urologists dealing with patients who have indwelling bladder catheters need to be aware of this condition.

REFERENCES

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Fig. 1. Purple discoloration of the urinary catheter plastic tube and bag.