

# Purple Urine Bag Syndrome: Time for Awareness

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### ABSTRACT

Purple urine bag syndrome occurs commonly in long-term catheterized patients causing significant stress for patients, care takers, and health care providers. This may lead to unwarranted investigation as well as treatment when not identified early. Demographic changes in Indian population with increasing geriatric care make it a case to increase awareness of this condition among health care providers in primary and secondary care settings.

**Keywords:** Catheter, geriatric care, purple urine bag syndrome

### Introduction

Purple urine bag syndrome (PUBS) is an uncommon condition where the urine bag and tubing of long-term catheterized patients turn purple. First reported by Barlow and Dickson in 1978 it is more commonly seen in chronically catheterized women and associated with chronic constipation. The process of purple discoloration has been described extensively beginning with deamination of tryptophan to tryptophase by the intestinal anaerobic bacteria which form indole, pyruvic acid, and ammonia. Indole is transported via portal circulation and converted to indoxyl sulfate (indican) in the liver. Indican excreted through urine is converted to indoxyl by indoxylsulfatase and indoxyl phosphatase produced by urinary bacteria. Indoxyl on oxidation in alkaline urine produces pigments indigo (blue) and indirubin (red). Indirubin reacts with the urine bag and along with indigo to produce a purple color.<sup>[1]</sup> There have also been case reports of purple diaper syndrome.<sup>[2]</sup> Dehydration is also an important factor as the serum concentration of indoxyl sulfate was found to have a linear correlation with the severity of the azotemia.<sup>[3]</sup>

### Case Report

We encountered an 83-year old male with the history of benign enlargement of prostate and chronic renal failure on long-term catheterization who presented with purple discoloration of his urine bag and catheter [Figure 1]. There was no associated

fever, altered sensorium, abdominal pain, or constipation with no findings suggestive of systemic infection. Urine analysis yielded alkaline urine [pH-7] with few white blood cells and microscopic hematuria, serum creatinine was 3.06 mg% while blood sugars and electrolytes were within normal range. The urine culture yielded insignificant growth of *Klebsiella pneumoniae*, *Morganellamorganii*, *Enterococcus*, *Citrobacterdiversus*, and *Pseudomonas aeruginosa*. Antibiotic treatment was deferred and the catheter changed to silicone tubing. Following this the urine color changed normal but purple discoloration reappeared after 2 weeks and persisted. The purple discoloration caused considerable distress to the patient and care-takers. They were informed of the harmless nature of the discoloration and reassured.

### Discussion

The prevalence of PUBS has been reported globally ranging from 9.8% to 8.3%<sup>[4]</sup> among hospitalized patients and 16.7%<sup>[5]</sup> to as high as 42.1%<sup>[6]</sup> among patients with prolonged catheter use. It was found to be associated with alkaline urine, urinary tract infections, renal failure, polyvinyl chloride urine bag, and dementia.<sup>[3]</sup> Though most cases of PUBS turn out to be clinically harmless underlying UTI can lead to serious complications as typical symptoms of dysuria are absent.<sup>[7]</sup> The awareness of this syndrome and need to initiate treatment for urinary tract infection are necessary as the outcome may be fatal if progresses to generalized septicemia.<sup>[8]</sup>

Considering the changing demography of the Indian population with increasing life expectancy, improved geriatric care and

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**Figure 1:** Purple discolouration of urine bag and catheter

geriatric specialty centers, it would serve better if practicing clinicians in primary and secondary health care setting be aware of this condition. It would serve to avoid expensive investigations, unjustified antibiotic use, and unwarranted anxiety among patients, care takers and treating physicians while promoting early diagnosis and management of PUBS. Creating awareness among patients and care-providers would benefit them in reducing anxiety and unwarranted cost of repeated health visits.

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### References

1. Khan F, Chaudhry MA, Qureshi N, Cowley B. Purple urine bag syndrome: An alarming hue? A brief review of the literature. *Int J Nephrol* 2011;2011:419213.
2. Komiyama A. Purple diaper syndrome in geriatrics. *J Am Geriatr Soc* 2006;54:1954-5.
3. Stanfel LA, Gulyassy PF, Jarrard EA. Determination of indoxylsulfate in plasma of patients with renal failure by use of ion-pairing liquid chromatography. *Clin Chem* 1986;32:938-42.
4. Su FH, Chung SY, Chen MH, Sheng ML, Chen CH, Chen YJ, *et al.* Case analysis of purple urine-bag syndrome at a long-term care service in a community hospital. *Chang Gung Med J* 2005;28:636-42.
5. ShiaoCC, WengCY, ChuangJC, HuangMS, ChenZY. Purple urine bag syndrome: A community-based study and literature review. *Nephrology (Carlton)* 2008;13:554-9.
6. Lin CH, Huang HT, Chien CC, Tzeng DS, Lung FW. Purple urine bag syndrome in nursing homes: Ten elderly case reports and a literature review. *Clin Interv Aging* 2008;3:729-34.
7. Peters P, Merlo J, Beech N, Giles C, Boon B, Parker B, *et al.* The purple urine bag syndrome: A visually striking side effect of a highly alkaline urinary tract infection. *Can Urol Assoc J* 2011;5:233-4.
8. Tasi YM, Huang MS, Yang CJ, Yeh SM, Liu CC. Purple urine bag syndrome, not always a benign process. *Am J Emerg Med* 2009;27:895-7.

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