

## Purple urine bag syndrome (PUBS) – an interesting case report

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### Abstract

Purple urine bag syndrome (PUBS) is a medical syndrome characterized by purple discoloration of the urine. The clinical course of PUBS is generally benign. We report a rare case of PUBS associated with constipation, precipitated by intake Amitriptyline & Pregabalin.

**Keywords:** PUBS, Constipation, Pregabalin, Amitriptyline.

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### Introduction

Purple urine bag syndrome (PUBS) is a rare syndrome, of multifactorial etiology, mostly related to urinary tract infections, chronic kidney disease, constipation, dementia, chronic catheterization, dehydration, use of polyvinyl chloride urinary catheter or bag, alkaline urine and certain medications.<sup>1-8</sup>

### Case Report

A 61-year-old male case of type 2 diabetes mellitus for 12 years, systemic hypertension for 3 years, diabetic neuropathy, was admitted with urinary retention and constipation since 5 days in the month of March 2020. His ongoing medications included Insulin, Metformin, and Metoprolol. He was started on combination of methyl cobalamin, Amitriptyline and Pregabalin for peripheral neuropathy 2 weeks prior to admission.

He was managed with laxatives, Foley's catheterization, Tamsulosin and optimization of other medications. Amitriptyline and Pregabalin were stopped. Surprisingly his urine was found to have purplish discoloration as shown in Fig. 1. He had no history fever, abdominal pain, recurrent dysuria, urolithiasis, native medicine intake or recent dietary changes.

His evaluation showed Hemoglobin 12.3 gm/dl, WBC count 10500 cells/cmm, platelets 3.1 lakh/cmm and ESR 42 mm/1<sup>st</sup> hour. Urinalysis showed purplish colored urine with pH 7.44, albumin trace, negative nitrite, 5-6 WBCs and 2-4 RBCs/hpf respectively. His

urine culture was sterile. His serum creatinine and blood urea were 1.1 and 34 mg/dl respectively. His RBS was 175 mg/dl and HbA1C was 7.8%. The serum PSA level was 2.5 ng/ml. Liver function test panel was normal. USG abdomen showed normal sized kidneys with normal echogenicity and preserved CMD. He had mild prostatomegaly (40 cc) and Urinary bladder was normal.

Upon review of his clinical history and laboratory findings; constipation, intake of Amitriptyline & Pregabalin were thought to be the implicating factors for PUBS. The Amitriptyline and Pregabalin were stopped. The discoloration cleared within 72 hours relief of constipation and stopping the drug (Fig. 2). He was discharged after successful voiding trial after 2 days, with an advice to review after 2 weeks. He was asymptomatic with well controlled T2DM and HTN on medication in the latest review in the month of September 2020.



**Fig. 1:** Urobag draining Purplish discoloration



**Fig. 2:** Urobag draining clear urine

## Discussion

Urinalysis constitutes a primary diagnostic tool in evaluation of renal diseases from ancient times, Urinary color, smell, presence of proteins, and sediments provides important information related to several medical conditions.<sup>1</sup> Usually urine is colorless to dark yellow from depending intake of water, hydration status and concentration of urinary pigments.<sup>1</sup> Urine discoloration per se is mostly benign, and usually resolves with removal of the offending etiology.<sup>1-10</sup>

Purple urine bag syndrome (PUBS) is referred to a condition caused by increased levels of indigo and indirubin in urine which are produced due to metabolism of the amino-acid tryptophan.<sup>1-6</sup> It was

reported for first time in 1978.<sup>6,8</sup> It is hypothesized that the pathogenesis of PUBS is due to the bacterial decomposition of dietary tryptophan in the gut lumen to indole, pyruvic acid and ammonia. Upon entry into the liver, indole is conjugated into indoxyl sulphate which is filtered by the kidney. Upon exposure to genitourinary bacteria expressing sulphatase and phosphatase enzymes, it is further metabolized to indigo.<sup>1-8</sup> Constipation is considered a key factor in this process, as it prolongs bowel transit and therefore tryptophan metabolism leading to elevated levels of urinary indole.<sup>6, 8</sup>

The PUBS is mostly related advanced age, female gender, constipation, dementia, bedridden state, end-stage renal disease, dehydration, chronic catheterization, use of polyvinyl chloride urinary catheter or bag, recurrent UTI, high urinary bacterial counts and alkaline urine.<sup>1-8</sup>

The drugs have also shown to cause discoloration of urine; for example, orange color due to Rifampicin or Phenazopyridine hydrochloride; deep yellow colored urine in those on B complex multivitamins; brown colored urine due to metronidazole, phenytoin, nitrofurantoin; green colored urine in those on Promethazine, Propofol, Amitriptyline, Cimetidine, Indomethacin, and bluish green due to Methylene blue ingestion.<sup>7,9,10</sup> Dose dependent constipation, obstructive voiding symptoms are one of the most frequent adverse effect seen with use of both Amitriptyline & Pregabalin; commonly developing within 1-2 weeks of their commencement.<sup>11-13</sup>

The PUBS in this case was thought to be due to combination of constipation and intake of Pregabalin & Amitriptyline. The PUBS was disappeared with treatment of constipation and withholding of Amitriptyline & Pregabalin, proving its benign nature.

## Conclusion

Urinary discoloration provides an important clue for underlying etiology. The PUBS is usually due to combination of multiple factors like elderly age, UTIs, constipation, indwelling catheters, being most common combination. This usually resolves with treatment of offending factors. Clinicians need to be aware regarding common adverse effective like constipation, urinary retention and dizziness associated with use of drugs

such as Amitriptyline & Pregabalin, for their timely withdrawal.

### Conflict of Interest

None.

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None.

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