

## Purple Urine Bag Syndrome: Reporting a Case of Rare Incidence in Portugal

### Síndrome do Saco Coletor de Urina Roxo: Relato de um Caso de Rara Incidência em Portugal

**Keywords:** Catheter-Related Infections; *Morganella morganii*; Urinary Catheterization; Urinary Catheters; Urinary Tract Infections  
**Palavras-chave:** Cateterismo Urinário; Infecções Relacionadas a Cateter; Infecções Urinárias; *Morganella morganii*

Purple urine bag syndrome (PUBS) is a rare, relatively unknown and mostly innocuous complication of bladder catheterization. It is caused by a combined gut-microbiota tryptophan metabolism, aided by the patient's liver metabolism by conjugation, followed by bladder-colonizing bacteria that further degrade those tryptophan-metabolites, increasing indigo and indirubin purple pigments in urine.<sup>1-3</sup> Interestingly enough, the urine frequently remains yellow, sometimes presenting increased sediment, and only the catheter-collector bag and tube acquire the purple color.<sup>4</sup> Multiple patient predisposing factors are already recognized, namely female sex, advanced age, constipation, chronic kidney disease, dementia, bedridden situations and/or institutionalization. Moreover, dehydration, alkaline urine, recurrent urinary tract infection (UTI) or bacteriuria and the use of polyvinyl catheter-collector bags are also associated with PUBS.<sup>1</sup> The most frequently described bacteria are *Proteus mirabilis*, *Morganella morganii*, *Escherichia coli*, *Klebsiella pneumoniae* and *Pseudomonas aeruginosa*.<sup>3</sup> Due to its flamboyant presentation, PUBS can be worrisome for patients, caregivers, and also healthcare professionals. Recognizing this syndrome is paramount to avoid misdiagnosis and treatment.

We report a case of a 64-year-old woman, frail, bedridden, immunosuppressed (liver transplant sequelae) and chronically bladder-catheterized. She presented to a primary healthcare (PH) unit acute-care appointment complaining of a one-day urinary catheter bypass, preceded by a two to three days gradually darker purple coloring of the catheter-collector bag and increased urine turbidity. She was concerned with the color of the urine bag. She denied having lower or upper UTI symptoms, ingestion of colored food or supplements, and medical procedures involving blue methylene or other pigmented dyes. At the physical examination, her skin and mucosa were discolored and poorly hydrated, she was afebrile, with discrete vesical globe (visible owing to her extreme thinness), renal Murphy sign negative bilaterally, and the urine catheter-collector bag had a deep purple color (Fig. 1A). Due to the confirmed urinary catheter bypass, the catheter was replaced. Its tip was completely clogged (Fig. 1B). Considering the possibility of an asymptomatic UTI in an immunosuppressed patient, a sterile urine sample was collected for urinalysis, and an eight-day bidaily amoxicillin + clavulanate 875 + 125 mg regimen was started, following previous approaches. Four days later, the patient returned to the PH unit asking for a second sterile urine sample collection, as the first one was inconclusive, presenting three unidentified bacteria. On that day, the fourth under antibiotic therapy, the catheter-collector bag had a regular transparent color but the urine still showed sediment. The second urinalysis identified *Morganella morganii*, resistant to amoxicillin + clavulanate. Urine pH was 9.0, had proteinuria (300 mg/dl) and urobilinogen (0.2 mg/dL), no nitrites, leucocytes, or erythrocytes, suggesting an amoxicillin + clavulanate resistant *M. morganii* colonization. No further action was taken, as the patient remained asymptomatic.

This rather benign condition is frequently alarming to patients and caregivers, and even to healthcare professionals. However, it can easily be managed at PH level, as little as increased hydration, constipation prevention measures, local hygiene, and catheter replacement are required to manage it, apart from UTI treatment, if confirmed by urinalysis.<sup>2,5</sup> The current letter intends to highlight this rare event and to aid healthcare professionals, including family physicians, in managing similar cases.

#### AUTHOR CONTRIBUTIONS

SGP: Data acquisition, curation, analysis and interpretation, writing and critical review of the manuscript.

OS, RF, RM: Data acquisition, critical review of the manuscript.

MC: Critical review of the manuscript.

All authors approved the final version to be published.

#### PROTECTION OF HUMANS AND ANIMALS

The authors declare that the procedures were followed according to the regulations established by the Clinical Research and Ethics Committee and to the Helsinki Declaration of the World Medical Association updated in 2013.

#### DATA CONFIDENTIALITY

The authors declare having followed the protocols in use at their working center regarding patients' data publication.

#### PATIENT CONSENT

Obtained.

**COMPETING INTERESTS**

The authors have declared that no competing interests exist.

**FUNDING SOURCES**

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

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**Figure 1** – Purple urine catheter-collector bag at the first primary healthcare unit acute care appointment: (A) the catheter-collector bag is completely colored purple in its inside walls; (B) the tip of the catheter is entirely clogged with urine sediments.

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**Recebido/Received:** 24/09/2024 - **Aceite/Accepted:** 15/10/2024 - **Publicado Online/Published Online:** 08/11/2024

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<https://doi.org/10.20344/amp.22354>

