

## Case Report

# Purple urine bag syndrome- changing hue!

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### ABSTRACT

Purple Urine Bag Syndrome (PUBS) is a unique disease entity characterised by purple discoloration of urine secondary to recurrent urinary tract infections with indigo and indirubin producing bacteria and is predominantly seen in constipated, chronically debilitated and catheterised women with alkaline urine. This syndrome indicates underlying recurrent urinary tract infections (UTIs) associated with higher incidence of mortality and morbidity than urinary tract infection alone without this occurrence. This article is about an elderly hypothyroid woman with PUBS and reviews the need to be aware of this entity.

**Keywords:** Purple urine, UTI

### CASE REPORT

An 85 year old woman was admitted in our care with a diagnosis of systemic hypertension and cerebrovascular attack (ischemic) with right sided hemiplegia. On reviewing the history, the relatives gave a history of anorexia, constipation and cold intolerance for 6 months. There was a history of inadequate oral intake following the untimely death of her daughter a few weeks prior to her admission in this hospital. On admission, there was an indwelling urinary catheter and nasogastric tube in situ.

Patient was drowsy, responding to commands intermittently, afebrile with a heart rate of 54/minute and a blood pressure of 140/90 mmHg. General examination was unremarkable except for dry tongue, coarse skin, pallor and puffiness of face. Neurological examination showed signs of right sided hemiparesis with bilateral extensor plantars. Other system examination was unremarkable.

Complete blood count revealed an Hb of 9.4 mg/dl with neutrophilic leukocytosis. ESR was 60 mm at the end of first hour. Basal metabolic profile was within normal limits while serum sodium was 109 mEq/L. 2D Echo was normal except for grade 1 diastolic dysfunction. MRI brain revealed diffuse brain atrophy and periventricular

leucomalacia. Thyroid profile revealed low serum T3 (0.43 ng/ml; ref. range 0.6-1.81), T4 (0.51ng/dl; ref. range 3.2-12.6) and a high serum TSH (60 IU/ml).



**Figure 1: Purple urine in urinary catheter and urobag.**

Hyponatremia correction was done and thyroid hormone replacement was initiated. Within a few days of care, her general medical condition and neurological condition improved remarkably but indwelling urinary catheter

could not be removed as she could not perceive bladder sensation. On the 22<sup>nd</sup> day of admission, purple color of urine in the drainage bag as well as catheter was noticed (Figure 1). Urinalysis revealed a pH of 9 (normal: 5.0-8.0). 12-15 white blood cells per high power field (normal: 0-2 per hpf). Blood culture was sterile and urine culture grew *Pseudomonas* spp. Colony count of 10<sup>5</sup> CFU/ml, sensitive to Ciprofloxacin, Ceftazidime, Cefoperazone and Gentamicin. The catheter was changed and the patient responded well to a course of aminoglycoside.

## DISCUSSION

Purple Urine Bag Syndrome is a rare phenomenon characterized by purple discoloration of urine catheter collecting bag, tubing as well as urine secondary to recurrent urinary tract infections (UTI) with indigo and indirubin producing bacteria.<sup>1</sup> Bacteria containing sulphatase and phosphatase enzymes result in transformation of indoxyl sulphate (a metabolite of tryptophan) to indirubin (red) and indigo (blue) pigments, the mixture of which turns the urine purple.<sup>1,2,4,6,7</sup> The patient is typically a bedridden, elderly woman, on longterm indwelling catheter, constipated with alkaline urine.<sup>1,2,3,5,6,7</sup> The most commonly involved pathogens are *Providencia rettgeri*, *Providencia stuartii*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *E. coli*, *Morganella*, *Citrobacter species*, *Enterococci*, *Group B Streptococci* and *Methicillin Resistant Staphylococcus aureus*.<sup>1,3,5,6,7</sup> Though considered to be harmless this condition is a cause of considerable concern for the patient and physician.<sup>3,4</sup> As this phenomenon indicates underlying UTI due to improper care of urinary catheter, treatment should be aimed at underlying UTI, constipation control and good urologic sanitation.<sup>1,3,4,8</sup>

In conclusion, physicians working in a nursing home and health care workers looking after old age home residents should be aware of this condition to prevent and institute a timely treatment for the same.

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