

Purple urine bag syndrome - a striking spot diagnosis

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Fig. 1 : Urine collection bag showing purple discolouration of urine (PUBS)

Case Summary :

A 74-year-old gentleman suffering from bladder outlet obstruction secondary to benign prostatic hyperplasia with indwelling suprapubic catheter presented to us with complaint of purple discoloration of the urine collection bag since past 4

days (**Figure 1**). He suffered chronic kidney injury due to the obstructive uropathy and was on intermittent hemodialysis with residual urine output of 300 ml/day. The indwelling catheter was placed since past 6 months and changed every 6 weeks as surgical intervention for prostatic hyperplasia was refused by patient. In addition, he had low grade fever, poor appetite and chronic constipation.

On examination, he was afebrile and hemodynamically stable. The urine was purple in colour in the tubing and the urobag (**Figure 1**). Urinalysis showed a pH of 8, albumin 1+ with plenty of pus cells and nitrite positive. His urine

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culture was positive for *Escherichia coli* (>10⁵ colony forming units/mL). A diagnosis of purple urinary bag syndrome (PUBS) was arrived on. His catheter with urine collection bag was replaced, and he was treated with culture-guided antibiotics. With this management there was clearing of the urine and resolution of the symptoms of the patient.

Discussion :

PUBS is an uncommon side effect of prolonged catheterisation with urinary tract infection and chronic constipation. Other risk factors for PUBS include female gender, alkaline urine and chronic renal failure, bed bound debilitated patient and PVC material of urobag. The purplish discoloration is proposed to be due to the breakdown of metabolites of tryptophan by bacteria possessing indoxyl phosphatase and sulphatase enzymes. (*E. coli*, *Proteus mirabilis*, *Pseudomonas aeruginosa*,

Klebsiella, *Enterococci*, Group B *Streptococci*, *Providencia*, *Morganella* and *Citrobacter*).¹ Tryptophan absorbed from gut undergoes conjugation in liver to indoxyl sulfate, which in the urine bag gets converted into blue coloured indigo and red coloured indirubin by the bacterial phosphatase and sulfatase. The combination of indigo and indirubin gives a final purple colour. Intensity of discoloration is more the longer the urine is in contact with the catheter plastic² (**Figure 2**).

In our case the risk factors of chronic indwelling catheter, urinary tract infection, chronic constipation (gives more time for bacterial action on tryptophan metabolites), and chronic renal failure (diminished clearance of tryptophan metabolites) were identified and addressed.

The management includes changing the foleys catheter and urine collection bag and treatment of underlying UTI. Good catheter hygiene, shorter duration of catheterisation and avoiding chronic constipation can reduce its incidence.³ PUBS can serve as an indicator of UTI in patients on prolonged catheterisation who may not show classical signs of UTI. Though alarming at times for the patient and care giver (unaware of this benign condition), management of the underlying risk factors usually resolves the problem.

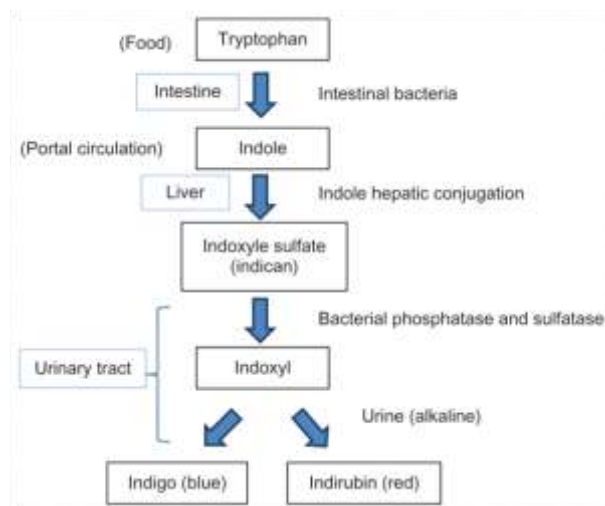


Fig. 2 : Pathophysiology of purple urine bag syndrome (PUBS)

References :

1. Khan F, Chaudhry MA, Qureshi N, et al. Purple urine bag syndrome : an alarming hue? A brief review of the literature. *Int J Nephrol* 2011
2. Al-Sardar H, Haroon D, Purple urinary bag syndrome. *Am J Med* 2009;122(10): e1-2.
3. S. Yaqub, S. Mohkum, and K. N. Mukhtar, "Purple urine bag syndrome: a case report and review of literature," *Indian Journal of Nephrology*, vol. 23, no. 2, pp. 140-142, 2013.