



# Purple urine-bag syndrome

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## Introduction

Described in 1978, the purple urine-bag syndrome (PUBS) is a rare condition in which the urine and the collection bag become predominantly purplish [1]. PUBS has a strong correlation with intestinal constipation, female gender, urinary tract infection (UTI), and, of course, the use of an indwelling catheter, which may be present in the short term, as in the postoperative period [2]. It is an uncommon occurrence, but prevalence of PUBS has been reported to be as high as 9.8% in institutionalized patients with long-term indwelling urinary catheter use.

The mechanism of PUBS (Fig. 1) originates from the dietary digestion and absorption of tryptophan in the bowel. Bacteria in the intestine metabolize the tryptophan to indole, and in addition, hepatic enzymes form the conjugate indoxyl sulfate for secretion into urine by the kidneys. In the urinary tract, gram-negative bacteria phosphatases and sulfatases metabolize the indoxyl sulfate to indoxyl and complete oxidation, which may convert to indigo and indirubin [3]. PUBS indicates infection of the urinary tract with gram-negative organisms; however, it may present as an asymptomatic bacteriuria also. Considering the risk of progression to septicemia, PUBS should be treated appropriately. The differential diagnosis in-

cludes hematuria, porphyria, alkaptonuria, and consumption of food such as blackberries, beetroots, carrots, fava beans, and oral aloe therapy. Also, ibuprofen, phenytoin, propofol, and L-dopa can cause urine discoloration.

## Case study

A 49 year-old woman with type 2 diabetes mellitus and indwelling urethral Foley catheter for 2 months to manage vesicovaginal fistula was admitted to the urology ward because of purplish urine and fatigue (Fig. 2). She denied fever, chills, nausea, or vomiting. Labs revealed normal white blood cell count, creatinine of 1.29 mg/dl, a marked leukocyturia and hematuria, urinary pH extremely alkaline (9.0), and positive nitrite. Urinary culture grew a multi-drug-resistant *Morganella morganii*.

After admission, Foley catheter and drainage bag were changed. The PUBS gradually resolved with administration of meropenem for 3 days along with acidification of urine with ascorbic acid. Urinary bag discoloration had resolved by the time of discharge, on fourth hospital day. Urine culture after treatment was negative.

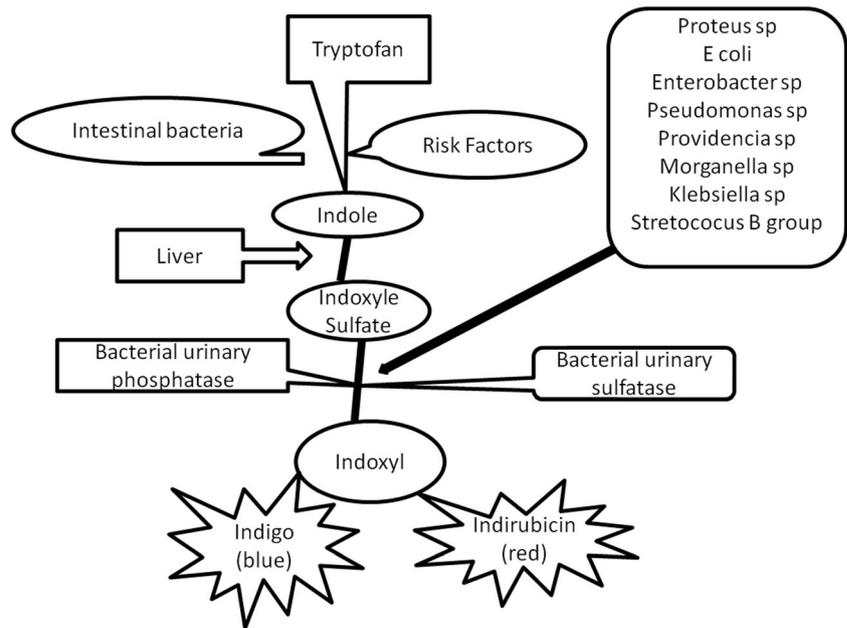
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**Fig. 2** Urinary bag and tube demonstrating purple urine at the time of presentation



**Fig. 1** Physiopathology of purple urine production

### Compliance with ethical standards

**Conflicts of interest** None.

**Consent** Written informed consent was obtained from the patient for publication of this case report and any accompanying images.

### References

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