CLINICAL PRACTICE

Clinical Images

Purple Urine Bag Syndrome

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A 97-year-old man presented with complaints of “purple urine” and constipation. The patient had a chronic indwelling urethral catheter secondary to urinary retention from prostate hyperplasia. Physical examination found a urine bag with purple discoloration (Fig. 1). Urine cultures grew *Klebsiella pneumoniae*. Following treatment with ciprofloxacin, his urine returned to a normal color.

Purple urine bag syndrome (PUBS) is an uncommon disorder in which the urine bags of catheterized patients turn

purple or blue. First described in 1978, most patients are bedridden, cognitively impaired, and constipated.¹

The discoloration is attributed to indigo (blue-violet) and indirubin (red-violet) pigments, which appear purple when combined. The pigments are created when ingested tryptophan is exposed to intestinal flora in patients with altered gut motility. Delayed gut transport allows coliforms to deaminate tryptophan to indole, which is absorbed and conjugated in the liver to indoxyl sulfate. Indoxyl sulfate is then catalyzed by sulfatases or phosphatases in the urine to indoxyl. Lastly, depending on urine pH and oxygen concentration, indoxyl is converted to indigo (high pH) and/or indirubin (low oxygen)^{2,3}. PUBS is usually associated with organisms that have indoxyl phosphatase/sulfatase activity (*Klebsiella pneumoniae*, *Providencia stuartii*, *Enterobacter* spp., *Proteus mirabilis*, *Morganella morganii*, and *Escherichia coli*).

Figure 1. Purple discoloration of urinary bag and catheter tubing.

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