Purple urinary bag syndrome

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Accepted 23 October 2014

DESCRIPTION

A 75-year-old woman presented reporting of feeling generally unwell. She had a history of cervical cancer, radiation enteritis and chronic urinary tract obstruction managed with a long-term urinary catheter. She was hypovolaemic and her urine was strikingly purple in colour (see [figure 1](#)) and malodorous. Urine dipstick was positive for nitrites and leucocytes; inflammatory markers were raised; and subsequent urine culture grew *Escherichia coli*, *Klebsiella pneumoniae* and *Morganella morganii*. She was treated with intravenous antibiotics and fluid resuscitation, her urinary catheter was changed, and the urine returned to a normal colour over 24 h.

Discolouration of the urine may indicate significant pathology, and visual inspection of the urine should form part of routine clinical examination. The purple urinary bag syndrome was first described in 1978 and refers to the rare but potentially alarming phenomenon of the urine and catheter bag turning purple in response to urinary tract infection.¹ It usually occurs in elderly patients with long-term urinary catheters. Intestinal bacteria metabolise tryptophan to indole, which is absorbed and conjugated to indoxyl sulfate (IS). IS is excreted in the urine where it may be converted to indigo (blue) and indirubin (red) by indoxyl sulfatase and phosphatase enzymes. Indigo and indirubin precipitate on to the catheter and catheter bag together as an intense purple colour.² The syndrome occurs due to high levels of IS in the urine and the presence of bacteria that are capable of producing these enzymes: *E. coli*, *K. pneumoniae*, *Providencia stuartii* and *Providencia rettgeri*, *Proteus mirabilis*, and *M. morganii*.

Figure 1 Purple discolouration of the catheter bag in response to urinary tract infection.

Learning points

- ▶ Visual inspection of the urine should form part of routine clinical examination.
- ▶ Purple discolouration of the urine and catheter bag signifies urinary tract infection with organisms capable of producing indoxyl sulfatase and phosphatase enzymes.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

REFERENCES

- 1 Barlow GB, Dickson JA. Purple urine bags. *Lancet* 1978;28:220–1.
- 2 Dealler SF, Hawkey PM, Millar MR. Enzymatic degradation of urinary indoxyl sulfate by *Providencia stuartii* and *Klebsiella pneumoniae* causes the purple urine bag syndrome. *J Clin Microbiol* 1988;26:2152–6.

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To cite: Evans R, Allan M, Walsh S. *BMJ Case Rep* Published online: [please include Day Month Year] doi:10.1136/bcr-2014-207483

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