

CASE REPORT

PURPLE URINE BAG SYNDROME: AN ALARMING HUE?

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ABSTRACT: Purple urine bag syndrome is a rare phenomenon reported mostly in females on an indwelling catheter in chronically constipated with alkaline urine. It is secondary to recurrent urinary tract infections with indigo and indirubin producing bacteria. Here we present this interesting case of an elderly woman who had purple colored urine bag.

KEYWORDS: Purple urine, UTI, tryptophan, indigo, indirubin pigment.

INTRODUCTION: PUBS is an uncommon unique disease characterized by discoloration of urine secondary to UTI with indigo and indirubin producing bacteria. First reported in 1978 and usually seen in women and chronic debilitated patient with long dwelling urinary catheter.

CASE REPORT: A 68 yr old bed bound female with history of stroke who had indwelling catheter in place for past two months presented to us in outpatient department with complaints of purple colored urine in the urine bag and tubing. On taking detailed history she revealed history of chronic constipation. She was admitted under the impression of UTI and constipation. On physical examination she was afebrile and vital signs were normal. Purple colored urine was noted in her urinary catheter and collecting bag.

Blood investigations revealed hemoglobin of 9 gm/dl, total leucocyte count of 9000, blood urea of 40 mg/dl. Her serum creatinine was 0.8 mg/dl, serum sodium 135mEq/L, potassium 3.8mEq/L, chloride 110 mEq/L, bicarbonate 20 mEq/L. Urine analysis showed alkaline urine of pH 8.1. Specific gravity of urine was 1.04 and positive for nitrate. Urine microscopy revealed leucocytes of 8 to 10, red blood cells of 2 to 4. Urine culture and sensitivity was sent. Lactulose was prescribed for relieving constipation. Her blood culture was sterile. Urine culture revealed *Pseudomonas aeruginosa* and *Klebsiella pneumonia* mixed growth/ml and sensitive to ciprofloxacin, levofloxacin, ceftazidime and cefaperazone. She was started on oral levofloxacin and after three days there was disappearance of purple color and the following urine analysis was sterile. Patient has been symptom free till last visit.

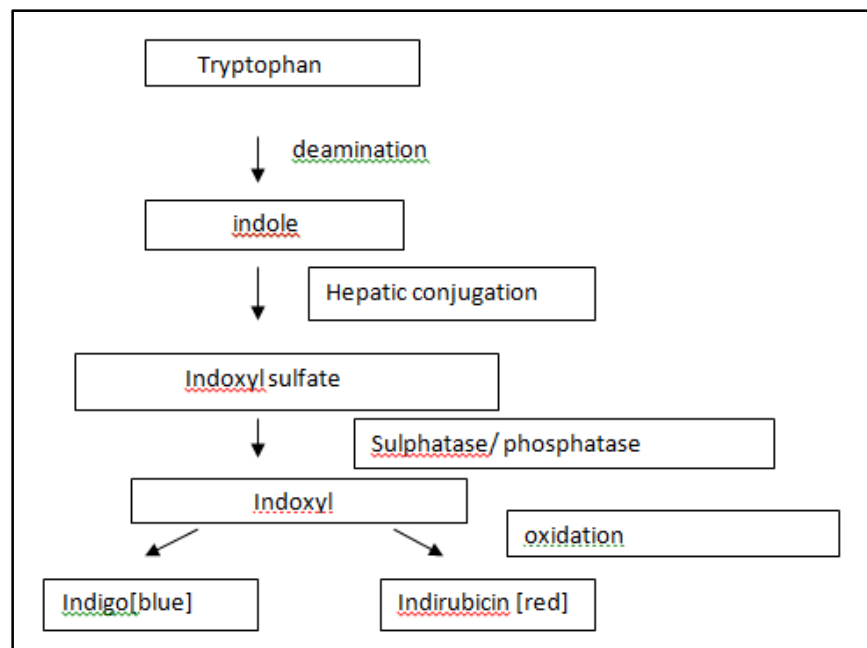
DISCUSSION: PUBS is a rare disease entity first reported in 1978 by Barlow and Dickson¹ and is signified by alarming purple discoloration of urine seen in chronically debilitated patients with long term indwelling urinary catheters.² Prevalence of PUBS in literature ranges from 8-16% in different studies.³

The pathogenesis stems from multiple bacterial urinary tract infections commonly with *Klebsiella pneumonia*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Citrobacter* species, *Proteus mirabilis*, *Providencia stuarti* and *rettgeri*.⁴ Recurrent UTI with bacteria producing

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sulphatase and phosphatase and presence of high tryptophan in diet causes formation of essential pigments and thereby causing purple coloured urine.

Tryptophan is converted to indole by intestinal bacteria which is absorbed in to portal circulation via intestinal wall. Liver converts indole in to indoxyl sulphate which is excreted in urine. In the presence of sulphatase, phosphatase producing organism's indoxyl sulphate is converted to indoxyl which turns in to indigo and indirubin in presence of high urine pH which are blue and red colors respectively. A mixture of these 2 colors gives characteristic purple color.^{5,6}



It has been observed that constipation⁷ and intestinal obstruction are strongly associated with PUBS. Chronic constipation allows adequate time for gut flora to deaminate dietary tryptophan. Even though the occurrence of UTI is commonly encountered in clinical practice PUBS is rare. This may be because of simultaneous presence of UTI with a sulphatase/phosphatase producing organism, high tryptophan diet and being catheterised is rare.

CONCLUSION: PUBS is a benign clinical condition and infrequent manifestation of UTI seen in chronic catheterized, constipated elderly women. However this phenomenon can cause anxiety to patient and their care givers it is therefore essential for a physician to know about the clinical course of PUBS and its prevention. Improvement in the care of urinary catheters prevents PUBS and other catheter associated urinary tract infections.

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Clinical pic 1



Clinical pic 2

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