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Case report: Purple urine bag syndrome

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Abstract

Purple urine bag syndrome (PUBS) was first reported in 1978. PUBS is rare, occurs predominantly in constipated women, chronically catheterized and associated with some bacterial urinary infections that produce sulphatase/phosphatase. The etiology is due to indigo (blue) and indirubin (red) or to their mixture that becomes purple. A chain reaction begins in the gastrointestinal tract with tryptophan as described in the article.

Keywords indigo, indirubin, purple urine bag syndrome

Purple urine bag syndrome (PUBS) is a rare syndrome associated with alkaline urine and some urinary tract infections, and is more frequently observed in chronically catheterized and constipated women. The urinary catheter drainage system changes colour from red or blue to violet or purple, sometimes with differently coloured tube and bag. The aetiology is still controversial but in the literature researched most authors believe that indigo, which is blue, and indirubin, which is red, are responsible for the colours obtained.

The chain reaction responsible for the PUBS begins with tryptophan from the food chain being metabolized by gut bacteria. This metabolic process produces indole, which is absorbed into portal circulation and converted into indoxyl sulphate in the liver, after a series of detoxification transformations.

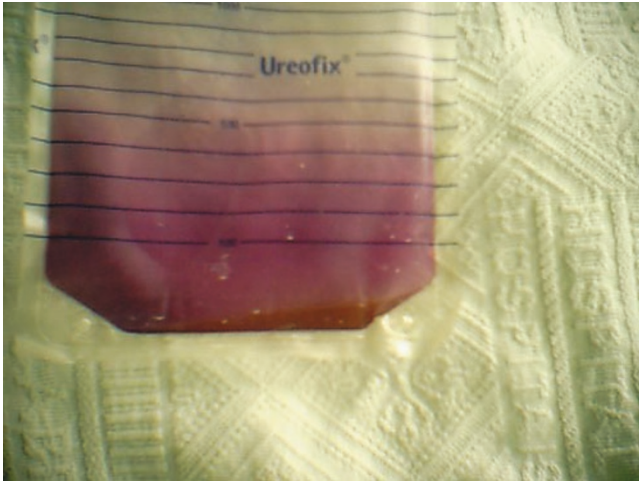
Indoxyl sulphate is excessively excreted in the urine and is digested into indoxyl by the enzyme sulphatase/phosphatase

Figure 1



Red bag and tube.

Figure 2



Violet/purple bag.

Figure 3



Blue tube.

Considering the known etiologic and physiopathologic mechanisms of PUBS, it is surprising how rarely this situation is observed and/or reported.

Competing interests

None declared.

References

1. Lin H-H, Li S-J, Su K-B, Wu L-S: **Purple urine bag syndrome: a case report and review of the literature.** *J Intern Med Taiwan* 2002, **13**:209-212.
2. Robinson J: **Purple urine bag syndrome.** *Br J Community Nursing* 2003, **8**:263-265.

produced by certain bacteria such as *Pseudomonas aeruginosa*, *Proteus mirabilis*, *Morganella morganii*, *Escherichia coli*, and so on. Indoxyl then changes into indigo and indirubin in alkaline urine [1,2].

Concerning PUBS, we present the clinical case report of a 56-year-old female patient with amyotrophic lateral sclerosis, mechanically ventilated in the intensive care unit for almost 6 years, chronically catheterized and with alkaline urine. Isolation of the bacteria *M. morganii*, *P. aeruginosa* and *P. mirabilis* in urine culture was frequent. The urinary catheter drainage system and the bag varied in colour and increased in intensity the longer the system remained unchanged (Figs 1–3 show different discolourations).