

Purple urine bag syndrome: a rare presentation of Fournier's Gangrene, A Case Report

Atif A. Katib, Alaa M. Shreef, Lamyaa H. Dally, Lujain D. Raggam, Zainab.H.Alhowsawi¹

Nursing technician at king abdulaziz hospital¹

Abstract

A change in urine color could be shocking to the patient, as well as to the healthcare workers, especially when it turns to a color they are not familiar with. Purple urine stems from urinary infection with bacteria capable of producing sulphatase/phosphatase enzymes that break down tryptophan substances in alkaline medium to indigo and indirubin. The latter combination tinges the urine with a frightening purple color known as “purple urine bag syndrome” (PUBS). The syndrome is rare and never reported in association with Fournier's gangrene. PUBS bacteria include *E. coli* and *Proteus mirabilis*. Despite the fact that PUBS appearance with a graphic appearance of a urine bag, it is a benign condition. Reassurance is crucial to allay patient's concerns.

A 48-year-old man was presented to the emergency room with a full-blown picture of Fournier's gangrene. A urinary catheter was inserted and drained purple urine. He wasn't febrile at the presentation. However, I was constipated on the days leading to the hospital show. The patient is not diabetic, and not a smoker.

The patient was admitted and treated with culture-based antibiotics after a thorough surgical debridement. He developed *Acinetobacter baumannii* in wound culture that was multi-drug resistant. He survived the critical phases and was released from the hospital on every-other-day dressing.

Keywords: Purple urine, Fournier's gangrene, *Acinetobacter baumannii*, ESCAPE organisms, UTI..

Introduction

Tryptophan is an essential amino acid; when ingested, it degrades by tryptophanase enzymes, namely sulphatase/phosphatase, in the intestine, into indoxyl sulfate. The latter is absorbed and excreted in the urine in a purple combination of indigo (blue) and indirubin (red) (1). Constipation, which prolongs tryptophan transit time in the intestine, results in increased indoxyl sulfate levels in urine and is a risk factor for purple urine bag syndrome. Other risk factors include alkaline urine, female gender, chronic catheterization, and renal failure (2).

People with purple urine bag syndrome usually do not complain of any symptoms. Purple

discoloration of urine bags is often the only finding, frequently noted by caregivers. Many bacteria have been implicated in the pathogenesis of PUBS; that include *E. coli* (21%), *Proteus mirabilis* (16.2%), *Klebsiella pneumoniae* (13.6%), and others (1).

Fournier's gangrene (FG) is an extreme form of polymicrobial extensive fasciitis that affects the urogenital organs. It is a rare life-threatening urologic emergency that requires immediate admission for metabolic stabilization and aggressive surgical debridement. The mortality rate ranges from 16% to 40% (3).

Acinetobacter baumannii is a gram-negative coccobacillus that has emerged from an organism of questionable pathogenicity to an

infectious agent of importance to hospitals worldwide (4). The organism has the ability to accumulate diverse mechanisms of resistance, leading to the emergence of strains that are resistant to all commercially available antibiotics (5).

Case presentation:

A 48-year-old man was presented to the emergency room with very advanced gangrene. The gangrene was extending from the upper thighs up to the chest. A urinary catheter was inserted and drained purple urine [fig. 1]. He wasn't febrile at the presentation. However, I was constipated on the days leading to the hospital presentation. The patient is not diabetic, nor a smoker. He has a menial job.

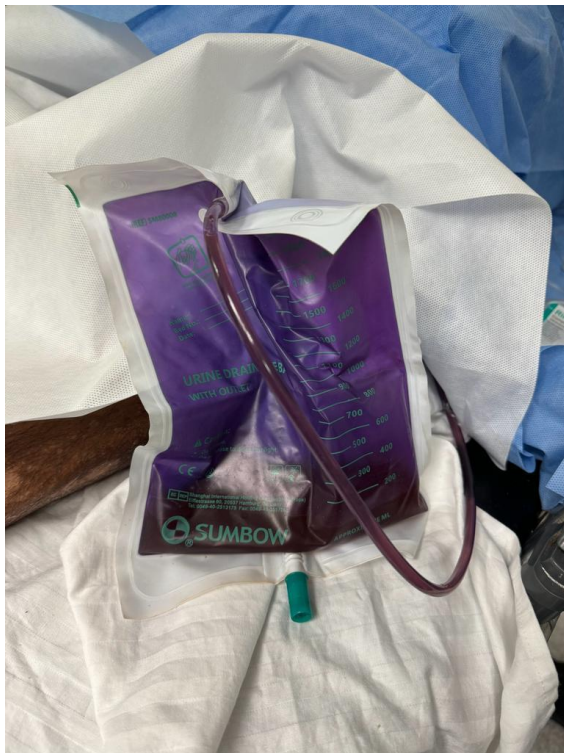


Fig.1 :Purple urine bag

The patient underwent an extensive surgical debridement from the mid-thighs up to the chest and moved to the ICU. He survived the acute phase and shifted to the intermediate-care ward for daily wound debridement. He grew *E. coli* in the urine and inflamed tissues, for which he was given Piperacillin, tazobactam antibiotics 4.5g iv as per cultures. After 3 weeks of hospitalization, the wound swab recovered

heavy growth of *Acinetobacter baumannii* that is resistant to all matched antibiotics. After improvement, he was released from the hospital for every-other-day wound debridement.

Discussion:

PUBS is a rare condition as the circumstances that beget purple urine are not common. What makes the case in hand rarer still is that it doesn't meet most of the aforementioned risk factors. PUBS might red-flag an underline UTI that is asymptomatic. On the contrary, in this case, PUBS preceded FG, a rare form of deadly urogenital infection.

Acinetobacter baumannii is one of the ESCAPE organisms, a group of clinically important, predominantly health care-associated organisms that have the potential for substantial antimicrobial resistance (6). In addition, carbapenem-resistant *A. baumannii* is one of the critical-priority pathogens on the World Health Organization priority list of antibiotic-resistant bacteria for effective drug development (7).

Conclusion:

Purple urinary bag syndrome (PUBS) occurs due to the breakdown of tryptophan metabolites in alkaline urine by certain bacteria. The discoloration itself is benign, though the underlying UTI is worrisome. It may serve as an indicator of UTI in symptomless cases. In this rare case, PUBS introduced Fournier's gangrene; an advanced form of urogenital infection.

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