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## Purple Urine in a Geriatric Patient

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### ABSTRACT

In this case report, a case of purple-colored urine in a geriatric patient who presented to the emergency department with confusion related to urinary system infection was presented. Although this urine color abnormality has a good prognosis, it can sometimes be an early indicator of patient mortality.

**Keywords:** Geriatrics, urinary tract infections, urine

### INTRODUCTION

Discoloration of urine is one of the most important findings that brings the patient to the physician.<sup>[1]</sup> Within this color scale, “purple” is not a very common finding, and it has always been approached with interest and priority by patients and physicians. Although urinary purple bag syndrome is well-defined in the literature and is mostly seen as a benign cause, it should not be forgotten that it may also be a manifestation of severe urosepsis.<sup>[2]</sup> A more dynamic approach may be required, especially in the geriatric group.

### CASE REPORT

A 82-year-old woman was admitted to the emergency department due to confusion, deterioration in general condition. Her medical history was remarkable for hypertension, Alzheimer’s disease and diabetes mellitus. It was learned that her oral intake was not sufficient for the past 15 days, and urinary catheter was placed 10 days before the admission. Neither recent trauma, nor operation history was present. The patient had been using fosinopril and thiazide, linagliptine, iron (II)-glycine-sulfate, olanzapine, ketiapine but she could not completely swallow her drugs for the past 3 days. On physical examination, consciousness was decreased, there was no place and time orientation, arterial pressure was 126/66 mmHg, heart rate 90/min, 38.7°C, spO<sub>2</sub> 97%, rales at lung bases were present. Polymerase chain reaction test was negative for Coronavirus disease-19. Laboratory tests of the patient at the time of admission are summarized in Table 1. Urinalysis was as; erythrocytes+, nitrite negative, pH 7, density 1017, and leukocyte negative with cloudy appearance. Purple urine color was seen in the urinary catheter. Purple urine in the urine bag is shown in Figure 1. Urine culture was taken and intravenous saline infusion was started, along with a renal dose of empirical piperacillin-tazobactam. It was observed that the color of the morning urine of the patient returned to normal the next day. However, the patient died on the same day due to cardiopulmonary arrest. *Enterococcus fecalis* and *proteus mirabilis* growths were detected in the urine cultures that resulted after exitus.



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**Table 1.** Laboratory tests of the patient at the time of admission

	Value	Normal range
Urea (mg/dL)	222	16.6–48.5
Creatinine (mg/dL)	3.26	0.65–1.2
Glomerular filtration rate (mL/min/1.73 m <sup>2</sup> )	12.51	
Serum albumin (g/dL)	3.5	3.5–5.2
Total protein (g/dL)	7.3	6.4–8.3
Sodium (mmol/L)	159	136–145
Potassium (mmol/L)	4.08	3.5–5.1
Uric acid (mg/dL)	14.1	3.4–7
C-reactive protein (mg/L)	81.29	0–5
Procalcitonin (ng/mL)	0.399	<0.05
Sedimentation (mm/h)	77	<15
White blood cells (×10 <sup>3</sup> /μL)	13.6	4.23–9.07
Neutrophil (×10 <sup>3</sup> /μL)	11.96	1.78–5.38
Hemoglobin (g/dL)	9.6	12–16

## DISCUSSION

Purple urine bag syndrome (PUBS) is a rare clinical condition that attracts attention from clinicians.<sup>[3]</sup> Risk factors include geriatric female patient, dehydration, urinary tract infection, constipation/intestinal obstruction, indwelling urinary catheterization, alkaline urine (facilitates indoxyl oxidation but can also be seen in acidic urine), diet rich in tryptophan, and history of kidney damage. In addition, the risk is considered to be high in patients with nephrostomy and in patients undergoing urinary diversion.<sup>[4]</sup> It is stated that the coexistence of dementia and urinary tract infection may lead to poor endpoints for PUBS. Infections caused by bacteria such as *Providencia*, *Proteus mirabilis*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Morganella morganii*, *Klebsiella pneumoniae*, and *Enterococcus* are included in the etiology. They cause the formation of indigo (blue) and indigo (red) pigments over indoxylsulphate (indoxylsulfatase and phosphatase-producing bacteria) which is a tryptophan metabolite (conjugated in the liver). A purple color is formed with the mixture of these in the urine bag (polyvinyl chloride). Our patient had many of the above-mentioned risk factors. First of all, it was thought to be caused by urinary tract pathogens that were accepted as potential and growth was detected in culture. Alkaline urine was not detected in our patient, and there were cases in the literature with PUBS without alkaline urine. Although PUBS is generally accepted as a benign entity, there are also reports in the literature that it may be an indicator of mortality.<sup>[5,6]</sup>

**Figure 1.** Purple urine in the urine bag.

## CONCLUSION

PUBS is a finding that should be approached carefully in patients who apply to the emergency department, and it should be kept in mind that it may be mortal because it can be an indicator of advanced infection.<sup>[7]</sup> Maybe there is not enough evidence to generalize, but it can be an alert sign, especially when it is detected in patients with high comorbidities.

### Disclosures

**Informed Consent:** Written informed consent was obtained from the patient for the publication of the case report.

**Conflict of Interest:** The author declares that there are no conflicts of interest.

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