


CLINICAL IMAGE

Purple urine bags reflecting an aging society

Shintaro Yamamoto^{1,2} | Tomoyuki Mukai¹ ¹Department of Rheumatology, Kawasaki Medical School, Okayama, Japan²Department of Internal Medicine, Sayo Central Hospital, Hyogo, Japan

Correspondence

Tomoyuki Mukai, Department of Rheumatology, Kawasaki Medical School, 577 Matsushima, Kurashiki, Okayama 701-0192, Japan.

Email: mukait@med.kawasaki-m.ac.jp

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Abstract

The purple urine bag syndrome is an underrecognized but quite common condition, resulting in marked discoloration of the urine bag system due to bacterial metabolism. This syndrome is associated with advanced age and bedridden persons.

KEYWORDS

advanced age, bedridden person, Purple urine bag syndrome, urinary catheter bag, urinary infection

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Purple urine bags were hanging at bedsides of older bedridden patients in a long-term care ward (Figures 1, 2), indicating purple urine bag syndrome (PUBS). PUBS is an underrecognized clinical condition characterized by purple discoloration of urine bags.^{1,2} It is associated with bacterial infections such as *Providencia* spp., *Escherichia coli*, and *Proteus mirabilis*.¹ These bacteria produce indoxyl sulfatase, which catalyzes indoxyl sulfate (a tryptophan metabolite) to indoxyl, which later oxidizes to indigo (blue) and indirubin (red) that interact to produce a distinctive purple color.¹ The discoloration occurs when the pigments contact with synthetic materials, indicating that the urine discoloration occurs in tubing and bags, whereas fresh urine itself is not discolored (Figures 2, 3). Risk factors developing PUBS include female sex, advanced age, alkaline urine, constipation, institutionalization, and dementia.¹ Its prevalence is reported to be nearly 10% of long-term care patients with an indwelling urinary catheter.² PUBS itself is not usually life-threatening, but prominent discoloration could scare patients, caretakers, and healthcare providers. Unawareness of this condition may result in unnecessary

investigation and unjustified antibiotics use. Since PUBS is associated with advanced age and bedridden persons, early recognition of this syndrome could improve geriatric care in aging societies.



FIGURE 1 Purple urine bags were hanging at bedsides in a room of a long-term care ward. The lying patients were an 84-year-old woman with chronic heart failure and an 86-year-old woman with lumbar compression fracture

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FIGURE 2 Purple discoloration of the urine bag and tube

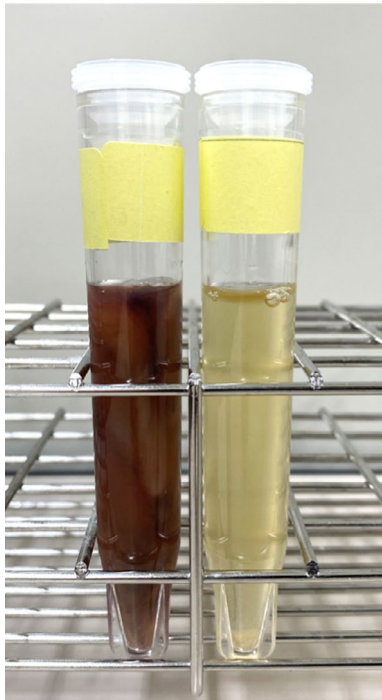


FIGURE 3 The color of urine samples. The urine drained from the urine bag was purple discolored (left), whereas the fresh urine collected from a collection port was not discolored (right)

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CONFLICT OF INTEREST

The authors declare no conflicts of interest in association with the present study.

AUTHOR CONTRIBUTIONS

SY: contributed to original idea. SY and TM: contributed to manuscript writing.

DATA AVAILABILITY STATEMENT

The data that support the findings of this case report are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

ORCID

Tomoyuki Mukai  <https://orcid.org/0000-0002-0103-1621>

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