

Case Report**Purple urine bag syndrome: a case report**

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ABSTRACT

Purple urine bag syndrome (PUBS) is a rare clinical entity. Few cases are described in the literature. It occurs in patients with predisposing factors. Here in, we reported a case of a PUBS in an 85-year-old female patient. She presented to the emergency room with confusion and oliguria over the past five days in a context of fever. Her past medical history was diabetes, hypertension and chronic kidney failure with preserved diuresis. Since two months, the patient was bedridden after a left femur fracture. During her hospitalization, the urinary catheter placement revealed initially hematuria, which became purplish next day that consisted with PUBS diagnosis. A multi-sensitive *Klebsiella pneumoniae* was isolated in the urine culture and treated by antibiotics with replacement of an indwelling catheter and urine bag. On the third day of antibiotic therapy, the urine reached gradually the normal color. The outcome was favorable. Purple urine bag syndrome must be recognized by the clinician to ensure an adequate patient management and avoid unnecessary explorations.

Keywords: Purple urine bag syndrome, Urinary tract infection, Urinary catheterization.

INTRODUCTION:

Purple urine bag syndrome (PUBS) is a rare and surprising condition for physician with few cases reported in the literature.[1] It often revealed an underlying urinary tract infection which occurred in predisposing factors patients. [2] Herein, we report a case of a PUBS in a women patient.

CASE REPORT:

An 85-year-old female patient presented to the emergency room with an altered states of consciousness, oliguria over the past five days and fever. She have had diabetes, hypertension, and chronic kidney failure with preserved diuresis. The patient underwent surgery for a left femur fracture since two months which was complicated with a multi-sensitive *Escherichia Coli* urinary tract infection and

treated without incident. The initial clinical examination showed a blood pressure of 140/70 mmHg, a heart rate of 109 bpm, an oxygen saturation of 97% at rest in room air and a normal state of consciousness with no fever. Her abdominal examination was normal. Laboratory tests showed kidney failure (creatinine = 405 $\mu\text{mol/l}$, urea=29.2 mmol/l) with a clearance of 9.86 ml/min. Blood count revealed a biological inflammatory syndrome with a leucocytes count of 11170 E/mm³ and the C-reactive protein was at 166 mg/l, and anemia with hemoglobin of 5.5g/dl and thrombocytopenia with platelet count of 77000 E/mm³. A bladder catheter was placed and revealed initially hematic urine, which became purplish next day (Figure 1), that leads to consider PUBS. The urine culture isolated a multi-sensitive

Klebsilla pneumoniae. The uroscanner was normal. The patient was treated with antibiotics and replacement of an indwelling catheter and urine bag. On the third day of antibiotic therapy, the urine returned to usual color. The outcome was favorable.

DISCUSSION:

Purple urine bag syndrome is a rare condition and an uncommon clinical entity. [2,3] Indeed, the first case was described by Barlow and al. in 1978.[3] Sabanis and al. reported in their meta-analysis 88 case reports and ten series of cases collected until 2017. [2] It's prevalence was 8% in patients with an indwelling urinary catheters carried over two years.[4] It is characterized by a sudden purple color of the probe and/or the urine collecting bag.[1] It mainly affects elderly women, bedridden, constipated and carrying a chronic indwelling bladder catheter. The particularity of our case was the short delay of one day between the placement of the catheter and the purple color of the urine.[1]

The physiopathology of PUBS has been correlated to an aberrant metabolism of tryptophan in presence of multiple predisposing factors.[2] Indeed, the pathogenesis is explained by the accumulation of a metabolite of tryptophan in the urine called 3-indoxyl sulfate. [5] This metabolite is degraded into two pigments: blue-colored indigo and red-colored indirubin, which gives the colored purple urine.[6] Several factors have been associated to this phenomenon and were described as the "ABCDEFGH Rules", such as Alkaline urine pH, Bedridden situation, Constipation, Dementia, End-stage renal disease, Female gender, Growth of bacteria and Hygiene long term catheterization. [2] Escherichia Coli is one of the most incriminated bacteria in this clinical entity, followed by Proteus Mirabilis and Klebsiella Pneumoniae which was identified in our observation.[1, 2, 5]

The clinical course is benign and the urine remains clear with resolution of the infection.[1, 2] The therapeutic management is essentially based on the eradication of the germ and the change of the urine collector without specific drugs not additional investigations. [7] However, it can cause high mortality in the presence of certain risk factors such as hyper uremia, hypovolemia, diabetes, hyperleukocytosis and female gender.[8] The prevention of this entity is possible by decreasing the duration of catheterization, the improvement of catheter care, and the placement of technological advances especially for elderly bedridden adults. [9]

CONCLUSION:

Purple urine bag syndrome is a rare entity that must be recognized by the clinician to ensure an adequate patient management and avoid unnecessary explorations costly to our patients without medical coverage in our developing countries. The detection of urinary tract infection must be systematic in order to avoid an unfavorable evolution in presence of certain risk factors.

Consent of patient:

The patient's oral consent has been obtained

Declaration of interest:

Declarations of interest: none

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REFERENCES:

1. Guei, M.C., Yao, K.H., Lagou, D.A., Coulibaly, P.N.A., Sawadogo, A., Ibrahim, M., and al., 2018. Purple urine-bag syndrome: A case report. *Néphrologie et Thérapeutique*, 14(3), pp.172-174. <https://pubmed.ncbi.nlm.nih.gov/29415863/>
2. Sabanis, N., Paschou, E., Papanikolaou, P. and Zagkotsis, G., 2019. Purple Urine Bag Syndrome: More Than Eyes Can See. *Current Urology*, 13(3), pp.125-132. <https://pubmed.ncbi.nlm.nih.gov/31933590/>
3. Barlow, G.B. and Dickson, J.A.S., 1978. Purple urine bags. *Lancet London England*, 1(8062), p.502.
4. Lopez Ríos, V., Ruiz Morales, J.J., Trujillo Florez, D.A. and Barrios Arroyave, F.A., 2021. Purple Urine Bag Syndrome: Case report and literature review. *Medicas Universidad Industrial de Santander*, 34(2), pp.83-88.
5. Mumoli, N., Vitale, J., Brondi, B., Basile, V. and Cei, M., 2013. Purple urine-bag syndrome in a department of medicine. *Journal of the American Geriatrics Society*, 61(12), pp.2240-2241. <https://pubmed.ncbi.nlm.nih.gov/24329829/>

6. Yang,C.J., Liang, P.L., Chen,T.C., Tasi, Y.M., Lien, C.T., Chong,I.W. andHuang, M.S., 2009. Chronic kidney disease is a potential risk factor for the development of purple urine bag syndrome.*Journal of the American Geriatrics Society*, 57(10), pp.1937-1938. <https://pubmed.ncbi.nlm.nih.gov/19807795/>

7. Nieder, N., Habchi, K., and Schmutz, T., 2017. Le syndrome de la poche à urines violettes. *Annales françaises de Médecine d'urgence*, 7(4), pp.274-274. <https://link.springer.com/article/10.1007/s13341-017-0746-4>

8. Su,Y.J. andYang, H.W., 2019. Risk factors of mortality in patients with purple urine bag syndrome.*Journal of Drug Assessment*, 8(1), pp.21-24. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6394334/>

9. Lin, C.H.,Huang,H.T.,Chien, C.C., Tzeng, D.S. andLung, F.W., 2008. Purple urine bag syndrome in nursing homes: Ten elderly case reports and a literature review.*Clinical Interventions in Aging*, 3(4),pp.729-734. <https://pubmed.ncbi.nlm.nih.gov/19281065/>



Figure 1. Purple colored-urine bag.