

# PURPLE URINE BAG SYNDROME: AN UNCOMMON HUE

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**Background:** Purple urine bag syndrome (PUBS) is an uncommon condition characterized by a bright purple discoloration of the urine usually affecting patient with limited mobility, long-term catheter and multiple comorbidities. Although considered as a benign phenomenon, it is often associated with increasing anxiety in patient, families and clinicians due to the uncommon color of the urine which is caused by specific bacteria. There are debates regarding how aggressively to treat this condition but no official guidelines are actually available: early antibiotic regimen and changing of catheter are suggested.

**Patient and Methods:** A 80-y.o. caucasian female with a past history of breast cancer was hospitalized in an Oncology facility for a strong back pain. On anamnesis she was affected by some age-associated comorbidities such as diabetes, arterial hypertension and chronic obstructive pulmonary disease. Two years earlier she underwent a right quadrantectomy with extended lymph nodes dissection due to a breast cancer: pathology revealed an invasive ductal carcinoma and she subsequently underwent adjuvant radiotherapy with chemotherapy with tamoxifen. She recently developed a strong back pain associated to legs hyposthenia, highly suspected for vertebral fracture. A contrast enhanced CT confirmed multiple vertebral metastases with multiple fracture. During hospitalization she received best supportive care and an indwelling catheter: a progressive purple discoloration of urine appeared during the following days (Figure 1).



Figure 1. Purple urine bag syndrome

**Results:** Urine cultures yielded *Pseudomonas aeruginosa*. Urinalysis revealed an alkaline pH of 7.5. According to antibiotic sensitivity test, the patient received therapy with daily gentamicin plus levofloxacin. D-mannose and methionine was also given in order to correct alkaline pH and speed up the resolution of infection: ten days later urine turned into normal colour. Therapy had fifteen days of duration.



Figure 2. Purple discoloration of urine

**Discussion and Conclusions:** Purple urine bag syndrome (PUBS) is a medical syndrome that occurs in the presence of urinary catheters and co-existent infection. Risk factors include female gender, chronic catheterization and renal disease: debilitating conditions, neoplasms or systemic illness may improve the incidence and worsen the prognosis. Clinically it is characterized by a purple discoloration of urine (Figure 2) as a result of bacteria producing sulphatase and phosphatase: this leads to tryptophan metabolism to produce indigo and indirubin pigments, a mixture of which becomes purple in alkaline urine<sup>3</sup>. *Escherichia coli*, *Pseudomonas aeruginosa*, *Klebsiella* and *Proteus* are frequently involved and alkaline urine is nearly always reported. Actually, there are no specific guidelines on how exactly to manage this condition: changing drainage bag and indwelling catheter, reassuring patient and starting with antibiotic therapy as soon as possible is mandatory. Antibiotic might be adapted to antibiogram since some patients present antibiotic-resistant bacteria and empirical regimen might be ineffective. Urine acidification, D-mannose and hydration may be useful as adjuvant therapies.