

An elderly with purple urine

一名紫色尿液的老人

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Purple discolouration of urine is not commonly encountered in accident and emergency departments. We report a case of an elderly gentleman on long-term urinary catheter who presented with purple discolouration of urine. He was found to have urinary tract infection caused by the bacteria *Proteus mirabilis*. The urine became clear after urinary catheter change and antibiotic treatment. This is called the purple urine bag syndrome and emergency physicians should be aware of this uncommon condition and the associated potentially dangerous conditions in order to initiate appropriate management. (*Hong Kong j.emerg.med.* 2009;16:159-160)

變紫色的尿液在急症室並不常見。我們報告一名長期使用尿導管的老翁呈現尿液變紫色的個案。發覺他因奇異變形桿菌而泌尿道受感染。換了尿導管及以抗生素治療後，尿液回復清澈。這被稱為紫尿袋綜合徵。為了能及早施行合適的治理，急症科醫生應認識這不常見的情況及其有關的潛在危險狀況。

Keywords: Indwelling catheters, purple urine bag syndrome, urinary catheterization, urinary tract infections

關鍵詞：留置導管、紫尿袋綜合徵、插尿管、泌尿道感染

Case

An 81-year-old gentleman presented to our Accident and Emergency Department in October 2008 with a complaint of discoloured urine for one day. He had history of hypertension, ischaemic heart disease and stroke requiring long-term urinary catheterization. He had no fever, urinary tract symptoms nor a history of recent trauma. There was no blood clot noted in the drained urine and he was asymptomatic except for the discoloured urine. His blood pressure was 179/78 mmHg and his pulse rate was 58 beats per minute. He was afebrile and not in respiratory distress. The most striking feature was that the drained urine was purple

in colour and the urine bag seemed stained purple too (Figure 1). No blood clot was seen inside the tubing or the urinary bag. He had only been put on his usual medications (lisinopril, methyl dopa and simvastatin) for stroke and hypertension. He had not taken other medications or Chinese herbal medicine lately. A urine culture was saved and he was treated as urinary tract infection. The urinary catheter and drainage bag were changed and he was given a course of cefuroxime sodium (Zinnat). The urine culture showed greater than 10^5 colony-forming units per millilitre of *Proteus mirabilis*. The urine discolouration resolved soon after treatment of the urinary tract infection and he recovered well.

Discussion

Urine discolouration is a common presenting problem in accident and emergency departments but purple discolouration of urine is not commonly encountered. The purple urine bag syndrome was first described in 1978¹ and sporadically reported in the literature

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Figure 1. Purple discolouration of urine in the urinary bag.

worldwide.²⁻⁷ This phenomenon was more commonly reported in elderly women. Other risk factors reported included debilitated status, long-term catheterization, chronic constipation and alkaline urine which might predispose an individual to the growth of contributory microbes.⁸ The syndrome has been associated with urinary tract infections caused by different bacterial species, such as *Providencia* bacteria, *Escherichia coli*, *Proteus mirabilis*, *Klebsiella pneumoniae*, *Morganella morganii*, *Pseudomonas aeruginosa* and *Enterococcus* species.^{5,7, 9-12}

Better understanding of the pathophysiology of this syndrome would guide management. Tryptophan in diet is degraded into indoxyl sulfate in the intestine. The indoxyl sulfate is normally absorbed and excreted in the urine. If an individual has urinary tract infection caused by any one of the above mentioned bacteria, enzymes produced called indoxyl phosphatase and indoxyl sulphatase will convert the urinary indoxyl sulphate into red-coloured substance (indirubin) and blue-coloured substance (indigo). The mixture of these two substances subsequently produces the special purple discolouration of the urine.⁹ When bowel transit time is prolonged in constipation, it promotes bacterial overgrowth and may alter the bacterial flora which is responsible for the degradation of dietary tryptophan. It was observed that the level of indoxyl sulphate absorbed and excreted in the urine was increased which is a risk factor for the syndrome.^{2,11}

The purple urine bag syndrome is usually a benign condition⁷ and is expected to resolve after the elimination of risk factors and clearance of the bacteriuria with a change of urinary catheter and drainage bag.^{5,11} It is not necessary to prescribe antibiotics if the patient is asymptomatic.¹¹ However, there was a case report of an elderly lady presenting with the purple urine bag syndrome precipitated by intestinal intussusception.¹³ The elderly lady had chronic constipation and stroke with urinary incontinence on long-term suprapubic catheterization. The occurrence of intussusception further decreased intestinal motility and precipitated the development of the purple urine bag syndrome. Therefore, the purple urine bag syndrome should not be regarded as a benign condition prematurely. These patients should always be screened for intestinal obstruction before safe discharge.

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