

Green coloured urine

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CASE REPORT

A 45-year-old Caucasian man with a long-standing history of sarcoidosis was admitted to the intensive care unit for acute respiratory failure requiring mechanical ventilation. He had no other significant past medical history. Home medications included low-dose prednisone, tear drops and amlodipine. Laboratory tests revealed a normal white cell count, renal and liver function. Chest X-ray showed a reticulonodular pattern. The patient was empirically started on ceftriaxone and azithromycin. He was also given high-dose methylprednisolone, heparin for deep vein thrombosis prophylaxis and pantoprazole. While intubated, he needed high doses of propofol and fentanyl to prevent patient-ventilator dyssynchrony. Forty-eight hours later his urine started turning green (*figure 1*). A urine dipstick and microscopy were normal. Urine porphyrins were undetectable. Blood tests were negative for leucocytosis or hyperbilirubinaemia.

Figure 1. Green coloured urine in the bag



WHAT IS YOUR DIAGNOSIS?

See page 285 for the answer to this photo quiz

DIAGNOSIS

Propofol is a short-acting, intravenous sedative hypnotic for inducing and maintaining anaesthesia or sedation. The above case depicts a benign discoloration of urine seen in less than 1% of patients who are on a propofol infusion. The famous Greek philosopher Hermogenes described the colour of urine as an indicator of many disorders in ancient times.¹ Bodenham and colleagues were probably the first to report propofol-induced green urine.² A number of other authors have reported this entity since.^{3,5} It usually manifests two to three days after starting the infusion; resolution of discoloration is rapid after discontinuation of propofol. Propofol is metabolised in the liver and excreted in urine predominantly as 1-glucuronide, 4-glucuronide and 4-sulphate conjugates of 2,6 diisopropyl-1, 4 quinol, which can cause greenish discoloration of urine. Alkalinisation of urine increases the formation of these phenolic derivatives.^{3,4} Hence green urine is more commonly seen in patients who develop respiratory alkalosis while on a ventilator. The compensatory increase in renal bicarbonate excretion leads to increased urine pH favouring formation of phenolic metabolites. However, not all patients on propofol who have alkaline urine develop greenish discoloration. This may be related to some genetic differences in its metabolism in different individuals and races. The differential diagnosis of green urine is diverse and before attributing it to propofol, other causes must be explored (*table 1*). Green urine associated with propofol is benign; prompt recognition of this phenomenon may limit unnecessary laboratory tests and avoid undue anxiety among caregivers.

Table 1. Causes of green urine

Drugs/ingestions	Metabolic disorders	Infections	Miscellaneous
Cimetidine	Hartnup disease	Pseudo-monas	Bile via vesico-enteral fistula
Promethazine	Indicanuria	urinary tract infection	Green beer
Indomethacin			Some green dyes
Metoclopramide			
Flutamide			
Methylene blue			
Asparagus			
Clorets (chlorophyll)			
Wilisan pills (Chinese herbal medication)			

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