

Propofol Induced Green Urine

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Abstract

Green color urine in postoperative period is rare event caused by propofol. Green urine after continuous infusion of propofol has been reported frequently but with a single induction dose it is rare. This case report highlights even after a single induction dose, propofol can cause green discoloration of urine. A 22-year-old male was admitted in the hospital for recurrent spontaneous pneumothorax due to bullae in the upper lobe of right lung. He underwent bullectomy via Video Assisted Thorascopic Surgery (VATS) under general anesthesia. In postoperative period he passed green color urine, which was identified to be due to propofol.

Keywords: Propofol; Green urine; Side effect

Introduction

Propofol (2,6 diisopropylphenol) is a commonly used anesthetic agent, has on rare occasions, been reported to discolor urine green [1,2]. The main metabolic pathway of propofol is oxidation, reduction, and hydrolysis by Cytochrome P450 (CYP 450) and glucuronate conjugation in liver microsomes and to some extent in intestine and kidney. The 4-sulfate and 1-or 4-glucuronide conjugates of 2,6-diisopropyl-1,4-quinol are renally excreted and may rarely result in green urine discoloration [2]. Its metabolites are biologically inactive substances, and, therefore, green urine associated with propofol is benign and completely reversible upon discontinuation [3].

Case Report

A 22-year-old male presented to emergency department with chief complaints of sudden onset breathlessness and right-sided chest pain of two hours duration. He had similar attack two times in past one year for which he was admitted and treated with chest tube insertion in other hospital. He had no significant medical and surgical history in past. He was a non-smoker and did not consume alcohol. His clinical examinations were normal except for scar marks on right side of chest. His weight was 60 kg with body mass index 19.5 kg/meter². The routine hematological and biochemical investigations were within normal limits. His chest X-ray showed right sided pneumothorax and which was managed in emergency department with chest tube insertion. Computer tomography (CT) scan of chest revealed bulla in right upper lobe. He was diagnosed as having recurrent spontaneous pneumothorax due to bulla in upper lobe of the right lung. He was planned for bullectomy under general anesthesia via video assisted thorascopic surgery (VATS).

He was pre medicated with tablet diazepam. Intraoperative monitoring was done as per ASA standard. After pre oxygenation, general anesthesia was induced with fentanyl (2 µg/kg), propofol (titrated to 100 mg) and succinyl choline (1.5 mg/kg) and intubated with double lumen endotracheal tube. Maintenance of anesthesia was done with intermittent positive pressure ventilation with oxygen and

isoflurane (adjusted to 1.2 MAC), fentanyl and vecuronium. Management of one lung ventilation was done with tidal volume 6 ml/kg, rate 16/min and positive end expiratory pressure (PEEP) of 5 mmHg. Intraoperative period was uneventful. Reversal of the neuromuscular blockage was achieved with neostigmine and glycopyrrolate, patient extubated and was transferred to the postoperative ward. After few hours of postoperative stay, green colored urine was noted (Figure 1). The patient was reevaluated, all medications were reviewed; renal function test, liver function test, urine analyses were sent for analysis. Urinalysis revealed pH 7, bilirubin content negative, and urobilinogen level over 8 EU/dl. Liver function test (LFT) and renal function test (RFT) were also normal. None of the drugs patient receiving was found to have side effect of causing green color urine except for propofol. By exclusion the discoloration of urine was found to be due to propofol and urine was monitored for next few days. The green urine gradually become lighter and finally returned to normal color in 48 hrs. Repeat LFT, RFT and urine analysis after 48 hours were also normal.



Figure1: Green colored urine.

Discussion

Green color urine in postoperative period can be caused by medicines, dyes, infections, ingested substances, and several other factors. Medicines associated with green urine usually contain phenol group like promethazine, thymol, cimetidine, and propofol [4-7]. Though the mechanism is unclear, it is assumed to be caused by phenol's conjugation in the liver and subsequent excretion by the kidneys [6]. Intensity of the urine color depends on propofol dose and the infusion rate [7]. Reducing infusion rate lightens the color. Although propofol induced green colored urine is associated with continuous infusion it can also be seen with a single bolus dose [6] as in our case. Diagnosis of this condition is made by exclusion. Evaluation of the patient's medical history and drug profile allowed us to exclude possible etiologies of green urine, such as methylene blue, indigo, biliverdin, medicines or infection. In addition, the temporal relationship between usage of propofol and the transient green discoloration of urine and lack of other known causes suggest that propofol was the cause of the green coloration. It is a self-limiting event and doesn't have short or long term impact in the renal, liver function or any other organ. Adequate hydration to maintain urine flow is all it requires.

Conclusion

A phenolic metabolite of propofol can produce green color urine. It may occur with continuous infusion or in rare instances with single

induction dose. The transient presence of green urine resolves after propofol discontinuation is benign and self-limited. Prompt recognition of this phenomenon may limit unnecessary laboratory tests and anxiety amongst caregivers.

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