**Postoperative Green Urine**
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**Introduction:** Propofol is one of the most widely used intravenous anesthetics and has led the expansion towards total intravenous anesthesia. However, adverse reactions such as the propofol infusion syndrome (metabolic acidosis, lipemic plasma, rhabdomyolysis and possibly progressing to death) have greatly curtailed propofol’s use as a long-term hypnotic/sedative agent. An additional albeit rare finding of propofol administration is the production of green urine. We present a case of a 15 year old male who developed postoperative green urine after a general anesthetic supplemented with a propofol infusion.

**Case Report:** A 44.7 kilogram 15 year old male presented for multiple releases, lengthening and rerouting of tendons due to contractures and deformities of his left-sided limbs. His limb deformities resulted from previous resections of a right thalamic astrocytoma complicated by left hemiparesis. The patient underwent a general endotracheal anesthetic via an intravenous induction with midazolam, propofol, fentanyl and vecuronium. Anesthetic maintenance consisted of propofol and fentanyl infusions (approximate totals: 30 mg/kg and 0.003 mg/kg respectively), 70% nitrous oxide in oxygen and vecuronium. Patient received one gram of cefazolin prior to incision. Morphine (0.070 mg/kg) and ondansetron (0.090 mg/kg) were given near the end of the procedure. The patient received 1800 ml of crystalloid and had an estimated blood loss of 100 ml. Prior to emergence, the patient’s bladder was catheterized and 150 ml of yellow urine was drained. Emergence and extubation were uneventful. The total anesthetic time was 5 hours. In the recovery room, patient was placed on morphine PCA, received a dose of valium (0.022 mg/kg) and an additional 200 ml of crystalloid. Approximately 4 hours post completion of the anesthetic, the patient voided 375 ml of green urine. Urine analysis was unremarkable and a urine organic acid screen was reported as having no unusual organic acids but unidentified compounds were noted. On review of the patient’s history and chart, he did not have any other known causes for his green urine such as ingested substances (e.g. food dyes and flavine derivatives) or other medicines known to affect urine color. The patient voided green urine three additional times over the next 6 hours. The latter void was less markedly green. The patient had no other symptoms associated with the green urine. The next urine void 15 hours post completion of the anesthetic did not reveal any green color.

**Discussion:** Propofol (2,6 di-isopropyl phenol) is mainly metabolized in the liver to a variety of inactive phenolic metabolites. An extremely small subset of the population appears to develop a propofol metabolite that results in the harmless excretion of a ‘green’ phenolic chromophore in the urine. An alkaline urine pH may play a role in the development of the green color. Eight cases of green urine implicating propofol are reported in the literature. Six are long-term ICU sedations in which green urine presents after a minimum of 36 hours. Of the two remaining cases, one had only an induction dose of propofol and the other had propofol sedation for an upper endoscopy. In the published cases, the discoloration lasted from hours to 7 days after the last propofol administration. This patient’s presentation was associated with a 5 hour propofol infusion and the onset of green urine hours after stopping propofol which differs from the previously published cases. Propofol is currently the only anesthetic associated with green discoloration but not the only drug used in the perioperative period that may cause green urine. Others include cimetidine, promethazine, methylene blue, indigo-carmine, indomethacin and possibly metoclopramide. Propofol also has been implicated in reports of green discoloration of the liver and hair as well as in cases of white, milky pink, rusty brown or tea colored urine.

Propofol induced green urine may present in a wide variety of clinical situations with different dosing regimens and variable timing of onset. Awareness of this rare, non-serious finding due to propofol will help minimize distress in patients, families and healthcare workers as well as limit unnecessary testing. An informal survey of over 30 anesthesiologists revealed only one who was aware of propofol’s association with green discoloration. Thus clinicians need to be aware of benign, drug induced alterations with dramatic presentations.

**References:**
1. Bray RJ, Paediatr Anaesth 1998