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Olgu Sunumu/*Case Report*

Why My Patient's Urine Was Green in Intensive Care Unit?

Yoğun Bakımda Hastamın İdrarı Niçin Yeşil Oldu?

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ABSTRACT

Urinalysis is an important part of patient follow-up in intensive care unit (ICU). In this case report we aimed to examine the green colored urine image that we observed in our ICU and the conditions that may cause this discoloration.
A 70-year-old male patient was admitted to our ICU due to multilobar pneumonia. He was intubated due to respiratory distress and 15 mcg/kg/min propofol infusion was started for sedation. It was observed that the urine was green after 16 hours. Causes of discoloration in urine were evaluated. Infusion was stopped due to similar cases in the literature. A total amount of 1200 mg propofol was administered to the patient. It was observed that the urine color returned to normal 8 hours after the drug was stopped.
A rare side effect of propofol is urine discoloration. Urine color may change when the excretion of phenolic metabolites exceeds the rate of hepatic clearance. It is reported that it can be seen even in anesthesia induction or sedation doses. It is important to know that the administration of propofol may change the color of the urine, that this will not be an important problem and that the color may return to normal with the discontinuation of the drug, in order to prevent unnecessary tests.

Keywords: *green urine, intensive care, propofol*

ÖZ

İdrar analizi, yoğun bakım ünitesinde (YBÜ) hasta takibinin önemli bir parçasıdır. Bu olgu sunumunda, yoğun bakım ünitemizde gördüğümüz yeşil renkli idrar görüntüsünü ve buna neden olabilecek durumları incelemeyi amaçladık.
70 yaşında erkek hasta multilobar pnömoni nedeniyle yoğun bakım ünitemize başvurdu. İzleminde solunum sıkıntısı nedeniyle entübe edildi ve sedasyon için 15 $mcg^{-1}kg^{-1}dk$. propofol infüzyonu başlandı. 16 saat sonra idrarın yeşil olduğu görüldü ve idrarda renk değişikliğine neden olabilecek faktörler değerlendirildi. Literatürdeki benzer olgular nedeniyle infüzyon durduruldu. Olguya verilen toplam propofol miktarı 1200 mg'dı. İlacın kesilmesinin ardından 8 saat sonra idrar renginin normale döndüğü görüldü.
Propofolün ender bir yan etkisi idrar renginin değişmesidir. Fenolik metabolitlerin atılımı hepatik klirensi aştığında idrar rengi değişebilir. Anestezi indüksiyonu veya sedasyon dozlarında bile görülebileceği bildirilmektedir. Gereksiz testlerin önlenmesi için propofol uygulamasının idrar rengini değiştirebileceğini, bunun önemli bir sorun olmayacağını ve ilacın kesilmesiyle rengin normale dönebileceğini bilmek önemlidir.

Anahtar kelimeler: *yeşil idrar, yoğun bakım, propofol*

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INTRODUCTION

Urinalysis is an important part of patient monitoring in intensive care units. Urinalysis can be performed in different ways; such as direct examination, culture, and urine dipstick tests, microscopic examination of urine sediment. Many parameters such as color, Ph, and density of urine, presence of ketone bodies

in urine can be examined in these tests. When changes in patient's urine color are detected in the intensive care units, differential diagnosis requires realization of sensitivity tests. We aimed to present our patient who applied to intensive care unit with green-colored urine and the factors that may cause this discoloration.

Propofol is an intravenous agent that can be used for anesthesia induction and sedation in intensive care unit [1]. In the Phase IV drug study conducted by Mcleskey CH et al. [2] with 25,981 cases, propofol-related side effects were observed in 10.8% of the patients. Serious side effects were detected in 0.2% of all cases (hypotension, nausea, vomiting, bradycardia, hypertension, respectively). As a rare side effect, green urine formation due to propofol induction or infusion has also been reported. It is known that this phenomenon has an effect of propofol metabolites (phenol components) and this components has no side effects on the kidney [3,4].

CASE

A 70-year-old male patient diagnosed with lung cancer was taken to the intensive care unit because of respiratory distress from multilobar pneumonia. When the patient is admitted to intensive care, his oxygen saturation was 92% and blood pressure 110/90 mmHg. The patient had no systemic disease and drug use. Hemoglobin, hematocrit, liver function tests, kidney function tests, bilirubin levels and electrolyte levels were within normal limits. On the 3rd day of hospitalization, intravenous propofol infusion was initiated at the dose of 15 $mcg^{-1}kg^{-1}min$ for the patient who was taken to mechanical ventilation support after the respiratory distress deepened and hypoxemia occurred. After about 16 hours, it was noticed that the previously normal color of the urine turned green (Figure 1).

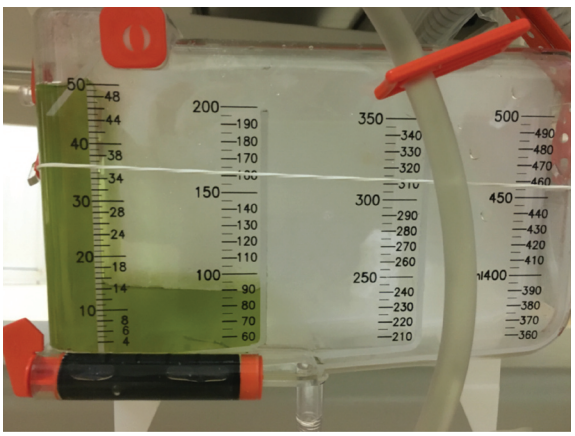

Figure 1. Green urine in intensive care unit.

First of all, bladder irrigation was done through a Foley catheter, the patient's nutritional products and medications used in intensive care unit were checked. No drugs known to cause color change were found. All urine and blood tests were performed with the suspicion of pseudomonas infection without any suggestive evidence. All parameters were normal except for urine color. Bacterial reproduction in urine culture was not reported when results were obtained 3 days later.

A literature review was performed for differential diagnosis in the patient whose liver tests, kidney function tests, electrolytes and bilirubin values were normal since his admission and similar cases related to propofol use were found [5-7]. Therefore the propofol infusion was stopped. Until this time, a total of 1200 mg propofol had been administered to the patient. Midazolam and morphine infusion was maintained for sedation. His urine turned yellow after 8 hours. There was no color change again during the follow-up.

DISCUSSION

One of the important variables that the laboratory technician and clinician can see macroscopically while performing urinalysis is urine color. Amber-yellow color, which is the normal urine color, is caused by the presence of several pigments. Urine color can change from light to dark. Some colors are clinically more significant than others. Medicines, dyes, foods, some medical diseases can change the color of urine. Erythrocyte, hemoglobin, myoglobin; red discoloration, rifampicin, phenothiazine; may cause red-orange discoloration. Dark brown-black urine may be seen in alkaptonuria and porphyria [8]. Green urine rarely occurs in intensive care units. Possible causes may be the infection of the urinary system caused by Pseudomonas spp., the use of phenol-containing compounds and Hartnup's disease [4].

One of the rare side effects of propofol is the appearance of green urine [9]. Blakey S. A et al. [10] reported its frequency as less than 1%. Propofol is basically metabolized in the liver to its metabolite 2,6-diisopropyl-1,4- quinol; It is excreted in the urine as 1-glucuronide, 4-glucuronide and 4-sulfate conjugates. These phenolic metabolites are thought to change the color of urine. Metabolites have no clinical significance and do not cause any kidney dysfunction or adverse effects.

It has been reported that this condition developed due to the use of propofol which can be seen at infusion doses or even after induction of anesthesia [4-7]. Approximately 16 cases have been reported to date [6].

CONCLUSION

Change of urine color in patients is a condition that we may encounter frequently. There are many reasons for green urine color. In this case, first of all, diseases, drugs, foods should be questioned. It should be kept in mind that it may be related to the use of propofol, especially in the operating room and intensive care units. It is important to know that the administration of propofol may change the color of the urine which will not indicate an important problem. Besides, urine color may return to normal with the discontinuation of the drug which eliminates worry and conduction of unnecessary tests.

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