

A Rare Presentation of a Child with Dark-Brown Colored Urine Due to Constipation Leading to Reabsorption of Bilirubin and Urobilinogen; A Case Report

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Abstract

We present a case of a 4-year-old child who presented with dark-colored urine. The child presented with high grade fever, severe abdominal pain, vomiting, loose stool, and dark-colored urine, prompting a thorough investigation to uncover the underlying etiology. Child had a long standing history of constipation. On evaluation, laboratory tests revealed elevated levels of bilirubin and urobilinogen in urine with no hematuria; normal serum bilirubin and liver enzymes, suggesting a mechanism of reabsorption of bilirubin and urobilinogen leading to urinary discoloration.

Keywords: *Dark-Colored Urine; Bilirubin; Constipation; Fecal Impaction*

Introduction

Dark-colored urine in pediatric patients is often associated with various pathologies including liver disease, hemolysis, and urinary tract infections [1]. However, rare presentations related to gastrointestinal issues leading to urinary discoloration are less commonly reported. We present a unique case of a child with dark brown colored urine attributed to constipation-associated reabsorption of bilirubin and urobilinogen.

Case Report

A 4-year-old male child who was a known case of ano-rectal malformation and constipation presented to our pediatric emergency with complaints of high grade fever, multiple vomiting episodes, abdominal pain, single loose stool for 1 day and later in the evening parents noticed dark brown-colored urine. There was no history of jaundice. Furthermore, the child had no significant past medical history of any other major illness apart from bucket-handle ano-rectal malformation for which he was operated after birth and mother was maintaining him on high fiber diet, at home anal dilatation and use of lactulose and fleet enema as per need basis; and there was no family history of liver diseases, hematological disorders or kidney disease.

On examination: the child appeared dehydrated and febrile, throat was slightly congested; dry tongue and lips; Abdominal examination revealed mild tenderness in the lower quadrants, without any signs of organomegaly or peritoneal signs. Anteriorly placed anal opening was noticed. No signs of jaundice. Laboratory investigations were conducted, including a blood count (CBC), liver function tests, renal function tests, urinalysis, G6-PD level, and serum Haptoglobin level which were normal except the urinalysis showed an abnormal dark color with increased levels of bilirubin and urobilinogen. Imaging studies, including abdominal ultrasound and x-ray were done; ultrasound showed no significant findings but x-ray abdomen revealed fecal loaded colon.

Based on the clinical presentation and laboratory results, a diagnosis of constipation-associated reabsorption of bilirubin and urobilinogen; and dehydration leading to dark-colored urine was suspected and single loose stool was most probably due to overflow diarrhea/spurious diarrhea. The child was managed with a combination of intravenous fluids, fecal evacuation with laxatives and enema, dietary modifications, and fluid intake monitoring. After fecal clearances the next day urine was clear and urine test revealed no bilirubin and urobilinogen. The parents were educated on the importance of regular bowel movements and the potential consequences of prolonged constipation. Pediatric surgeon was assigned for the ano-rectal malformation follow-up and management. Follow-up consultations were scheduled to monitor the child's progress and address any concerns.

Discussion

The case represents the rare manifestation of a common pediatric problem, constipation which led to the reabsorption of bilirubin and urobilinogen resulting in dark brown colored urine. Constipation-induced fecal stasis can lead to alterations in the entero-hepatic circulation, causing an increase in bilirubin (gives dark color to urine) and urobilinogen (colorless pigment) reabsorption [2]. This case highlights the necessity of considering gastrointestinal etiologies in the differential diagnosis of dark-colored urine, especially in the absence of typical causes such as hemolysis or liver disease.

Urobilinogen is a colorless pigment produced in the gut from bilirubin, some is excreted and rest is absorbed and then excreted in urine. 80% of bilirubin produced in the body comes from red blood cells and rest from other heme proteins. Bilirubin is conjugated in liver and is secreted in bile. In a healthy individual with normal liver function and bile duct anatomy, bilirubin is not detectable in the urine [1]. Other causes of dark colored urine includes foods such as beets, blackberries etc. a variety of medicines, internal vaginal bleeding, kidney stones, muscle injury due to extreme exercise etc [3]. Color specific causes are, but not limited to:

- Red urine: Hematuria is likely the most common cause. Common causes of hematuria are infectious, stone disease, malignancy, trauma, fistula, medical renal disease, and contamination (menstruation). Numerous medications and foods also can cause red color urine.
- Brown urine: Cause can stem from the causes of red urine. Old clot sediments, myoglobinuria and hemoglobinuria, acute tubular necrosis etc. few medications like metronidazole also can cause the urine to turn brownish.
- Purple urine (on sun exposure of urine in porphyria); blue urine (iatrogenic causes- methylene blue), green urine (food and supplements like asparagus, black licorice; medicines like promethazine, cimetidine, metoclopramide; urinary tract infection with *Pseudomonas* etc.); white urine (also called albuminuria; commonly due to sediments, mineral crystal, funguria and sometime substantial bacterial infection, chyluria etc.) [4].



Figure: Urine sample of the patient.

The importance of recognizing and managing constipation in pediatric patients cannot be overstated, as chronic constipation can lead to complications including fecal impaction, rectal prolapse, low back pain, hemorrhoids, spurious diarrhea, rectal bleeding, inability to pass flatus, abdominal pain, vomiting and in long term nutritional imbalance. Prompt recognition and management of constipation are crucial to prevent potential complications.

Conclusion

In conclusion, the presented case demonstrates a rare presentation of dark-colored urine in a pediatric patient, attributed to constipation-associated reabsorption of bilirubin and urobilinogen. This case emphasizes the need for a comprehensive evaluation to investigate atypical presentations and highlights the importance of recognizing and managing constipation promptly. Awareness of such rare manifestations is essential for clinicians to ensure timely diagnosis and appropriate management, thus improving patient outcomes and preventing unnecessary investigations and interventions.

Conflicts of Interest

Authors have no conflicts of interest.

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