LETTER TO THE EDITOR

A Rare Cause of Gross Hematuria due to Placing a Patient with Distended Bladder in Prone Position

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Hematuria is the presence of red blood cells (RBCs) in the urine which is a common problem caused due to various reasons. It is further categorized into gross hematuria and microscopic hematuria based on the number of RBC visualized in a high-power field (HPF) of a microscope. Gross hematuria, which appears evidently red to the naked eye has more than 50 RBCs in an HPF, whereas microscopic hematuria has more than 3 RBCs per HPF. After obtaining written informed consent, we wish to report an event of gross hematuria after positioning a patient with a distended bladder to prone.

A 61-year-old female patient weighing 66 kg [body mass index (BMI): 28.6 kg/m^2] with severe coronavirus disease-2019 (COVID-19) pneumonia was admitted into our intensive care unit (ICU) for the management of respiratory failure. In view of severe hypoxemia, she was intubated and placed in the prone position for 18–20 hours a day for the next 4 days. She was requiring 100% FiO_2 and a driving pressure of 30 cm H_2O to maintain oxygen saturation of 92–94% in the prone position. Her complete blood picture and organ function tests were unremarkable, and being monitored on a daily basis. Since day 4 of her ICU stay, urine output decreased gradually in spite of stable hemodynamics, and on day 5, she was anuric for four hours in the supine position. Upon ultrasound examination, her bladder was found to be distended with an estimated urine volume of around 1500 mL. A blocked urinary catheter diagnosis was made and the catheter was flushed with 10 mL of normal saline to relieve the obstruction. As a result, clear urine started coming albeit slowly at the rate of 10–15 mL/min. A few minutes later, patient was placed in the prone position to manage the ongoing hypoxia (saturation of 83–86% with 100% FiO_2) in the supine position. Soon after placing the patient in the prone position, the urine color changed to dark red. Around 1650 mL of dark blood-tinged urine drained in the next 1 hour. Although we were initially clueless about the etiology of this event, bladder injury was suspected as a result of high intravesical pressure due to the prone position. The patient was placed back in the supine position to examine the abdomen using ultrasonography which showed no evidence of fluid in the abdomen or in the perivesical space that ruled out bladder rupture. The patient was placed back in prone position after complete drainage of the bladder and replacing the old urinary catheter with a new one. Urine color started to normalize an hour later and became clear by the next 4 hours. There is no noticeable fall in hematocrit after this event when compared to the previous laboratory value. The patient stayed in our ICU for 10 more days but never had any episodes of hematuria. As the hematuria started settling immediately, we did not investigate the patient further except for the daily routine investigations, which were unremarkable.

To our knowledge, hematuria due to a prone position in a patient with a distended bladder was not reported. Traction on the urethral catheter during the patient's positioning can cause hematuria, but it is usually insignificant and self-limiting.[1] Hematuria has been reported following bladder drainage in 2–16% of high-pressure chronic urinary retention managements by decompression and is largely self-limiting.[2] Our case is unique in that the urinary retention was acute and no instrumentation was done prior to the onset of hematuria except for placing the patient in the prone position. Positioning the patient to prone for lumbar spine fixation in a patient having a clot in the right kidney presented with gross hematuria, where clot dislodgement was postulated to be the cause.[3] Although the exact cause in our case is not clear, we postulate that the compression of the distended bladder between the pelvic bolster and the lower torso might have led to bladder mucosal injury which caused transient, gross hematuria. Although we ensured relief of the catheter block, we could not wait until the bladder is completely drained before the patient is placed in the prone position, as the patient had ongoing severe hypoxemia. Prompt drainage of the distended bladder with a new urinary catheter instead of flushing the indwelling catheter could have averted this complication. An empty bladder should be an essential component of the "pre-prone" checklist to avoid unwarranted complications.

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