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Urethral Obstruction



The most common causes of urethral obstruction (UO) in male cats are urethral plugs, uroliths, and idiopathic cystitis. Obstruction leads to increased pressure in the urinary bladder and urethra, which in turn may cause upper urinary tract disease, decreased glomerular filtration rate, and subsequent azotemia and hyperkalemia. Both the inciting cause and resulting urinary tract distension may cause hemorrhage and discolored urine. This prospective study sought to correlate gross urine color with clinicopathologic findings common in cats with naturally occurring UO.

Castrated cats ($n = 75$) that were presented for UO, catheterized, and had a lateral survey radiograph and lower urinary tract ultrasound were included. Urine color was scored based on a standardized chart (1 through 5: yellow, peach, pink, red, burgundy). Urinalysis, including dipstick and sediment examination, was performed. Darker urine color, significantly positively correlated with serum creatinine and potassium concentrations, was a significant predictor of azotemia. Additionally, urine color was significantly positively correlated with presence of red blood cells in sediment and blood on dipstick. Urine color was significantly negatively correlated with urine specific gravity. Urine color was not associated with presence or absence of crystals or lower urinary tract stones. These results suggest that cats with darker urine, which may indicate more significant metabolic changes, may require more aggressive supportive care during urinary catheter placement.

Global Commentary

The more time that passes between onset of urethral obstruction and establishment of urethral patency, the more likely there will be urinary bladder mucosal damage causing hematuria and post-renal azotemia or uremia. Prolonged urethral obstruction is also more likely to cause renal injury and decreased urine-concentrating ability. Although not evaluated in this study, it would be interesting to know if darker urine color at presentation is also associated with prolonged hospitalization or increased urethral obstruction recurrence rates. It should be emphasized that, although azotemia and hyperkalemia are more common in obstructed cats with dark urine, these metabolic derangements cannot be ruled out in obstructed cats with normally colored urine.—Gregory F. Grauer, DVM, MS, DACVIM (SAIM)

Source

Brabson TL, Bloch CP, Johnson JA. Correlation of gross urine color with diagnostic findings in male cats with naturally occurring urethral obstruction. *J Feline Med Surg*. 2015;17(6):453-457.

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Out for Blood

Previous studies have demonstrated that canine red blood cell (RBC) transfusions delivered via mechanical pump methods, especially syringe and aggregate filter methods, cause increased destruction of transfused RBCs. It is not known if this increased destruction occurs during feline RBC transfusions. Feline RBCs are smaller than canine RBCs and have a greater increase in stiffness during hypoxic conditions, thus they may behave differently from canine RBCs under the same transfusion conditions.

This prospective study analyzed autologous feline RBC transfusions in 6 cats.

Biotin-labeling and flow cytometry were used to evaluate the effect of the transfusion procedure on short-term survival and circulating half-life of transfused RBCs. RBCs were transfused using either gravity or mechanical pump using a 20-mL syringe and 18- μ m micro-aggregate filter. Following the transfusion, whole blood samples from the cats were analyzed to assess circulating half-life of transfused cells. Autologous transfusion of feline RBCs using the syringe and aggregate filter method did not significantly impact the short- or long-term survival of feline RBCs compared with the gravity method.

Commentary

Autologous transfusion in healthy cats through a microaggregate filter within 12 hours of collection resulted in good RBC survival that was comparable to normal feline RBC survival. In a similar study of

healthy dogs, 24-hour canine RBC survival was much shorter (<24 hours) in the microaggregate group.¹ The canine study, however, did not report how soon the blood was reinfused after collection and processing. The difference may be because of smaller volumes of blood being collected in the feline study and the smaller size of feline RBCs. This may allow feline RBCs to pass through the filter with less trauma.—Elke Rudloff, DVM, DACVECC

Reference

1. McDevitt RI, Ruaux CG, Baltzer WI. Influence of transfusion technique on survival of canine autologous red blood cells in the dog. *JVECC*. 2011;3(3):209-216.

Source

Heikes BW, Ruaux CG. Effect of syringe and aggregate filter administration on survival of transfused autologous fresh feline red blood cells. *JVECC*. 2014;24(2):162-167.