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A case report on feline idiopathic cystitis#

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Abstract

Feline idiopathic cystitis is similar to human interstitial cystitis as the occurrence of both diseases is characterised by the involvement of stress, severe abdominal pain and a reduction in the protective glycosaminoglycan layer of the bladder. The present case report involves the occurrence of feline idiopathic cystitis in a tomcat. The animal was presented with the signs of anorexia, vomiting, haematuria, dysuria, pollakiuria, periuria and urethral obstruction. Based on the results of haematology, serum biochemistry, imaging techniques, urinalysis and culture results, the case was diagnosed. Urethral patency was re-established by urethral catheterisation and the case was managed with a combination of medical, dietary and multi-model environmental enrichment therapy.

Keywords: *Feline idiopathic cystitis, interstitial cystitis, glycosaminoglycans*

Feline idiopathic cystitis (FIC) is the most common cause of feline lower urinary tract disease and is similar to the human interstitial cystitis (IC), which is characterised by severe painful frequent urination without an identifiable cause (Gunn-Moore, 2003). The term FIC or feline interstitial cystitis was coined by Buffington *et al*. (1996) to describe chronic lower urinary tract signs (LUTS) in cats where an etiology cannot be identified in any of the diagnostic tests. Therefore FIC is always a diagnosis of exclusion (Westropp and Buffington, 2016). As per Gunn-Moore (2003), some cats with FIC had lowered urinary excretion of glycosaminoglycans (GAG) as a result of defective GAG

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layer which is the protective layer of bladder. This exposes the urothelium and it comes directly in contact with the noxious substances in urine, stimulating the sensory neurons and initiating inflammation. Studies have reported increased incidences of FIC in middle aged, stressed, obese, indoor housed cats fed on dry diet. Incidences were also higher in cats using indoor litter box, and in those living in a multi-cat households (Taylor, 2015). The management of FIC involves medical therapy, dietary therapy and multi-model environmental enrichment (MEMO) therapy (Gunn-Moore, 2003). Since there is no permanent cure for FIC (Westropp and Buffington, 2016), the main objective of the treatment and managemental changes is to reduce the severity and frequency of recurrent LUTS and to improve the quality of life (Naarden and Corbee, 2020).

A male cat aged 3 years (body weight 3 kg) was presented to the University Veterinary Hospital, Mannuthy with the complaint of anorexia, vomiting, dysuria, haematuria (Fig. 1), pollakiuria and periuria. History revealed that the animal was housed indoors, fed solely on dry diet and used an indoor litter box. There was also a history of construction work in the house in the recent period. The general clinical examination revealed parameters to be within the normal range except for the presence of tachycardia (185 bpm). The physical examination revealed distension of urinary bladder with wall thickening and abdominal pain. The radiographic findings did not show any significant findings except for the distension of bladder (Fig. 2). Ultrasonographic findings included distension of bladder with wall thickening and hyperechoic structures inside the bladder (Fig. 3). The haematological findings were within the normal range. Serum biochemistry evaluation revealed elevated blood urea nitrogen (85.14 mg/dL) and creatinine (8.5 mg/dL) levels possibly resulted from urethral obstruction. Venous blood gas analysis revealed a mild decrease in blood pH (7.2), bicarbonate (16 mmol/L), base excess (- 9.6 mmol/L) and calcium (1.09 mmol/L) along with a mild increase in potassium (5.5 mmol/L) possibly associated with urethral obstruction (Lee and Drobatz, 2003). The electrocardiographic findings were found to be normal except for the presence of tachycardia that might have resulted from the excessive sympathetic system activity developed in response to pain and stress which would have masked the effect of hyperkalemia (Segev *et al*., 2011). Urine samples were collected aseptically by transurethral catheterisation under sedation with the combination of butorphanol (@ 0.3 mg/kg intravenously) and diazepam (@ 0.5 mg/kg intravenously) as suggested by Balakrishnan and Drobatz (2013). The urine sample was subjected to both macroscopic and microscopic evaluation. The macroscopic examination revealed reddish turbid urine with a pH of 7.5 and a specific gravity of 1.030. Microscopic examination revealed presence of erythrocytes, leucocytes, struvite crystals and epithelial cells. The urine culture revealed negative results suggestive of sterile urine. Based on the results of diagnostic tests the case was diagnosed as FIC.

The treatment was initiated by bladder lavage with sterile normal saline as it removes the debris, blood clots and crystals from bladder (Osborne *et al*., 1996). The indwelling catheter was kept in place as it was difficult to relieve the obstruction. Indwelling catheters helps to resolve the metabolic changes associated with acute kidney injury, hastens the repair of urethral injuries if present any, reduce chances for re-obstruction and also helps to retain the normal detrusor function as severe bladder distension could result in detrusor atony. Fluid therapy was initiated with Ringer lactate at @ 10 ml/kg/h intravenously to correct dehydration and mild hyperkalemia (Gunn-Moore, 2015). Since the effects of hyperkalemia did not reflect any change in the cardiac function, fluid therapy along with the restoration of normal urine flow was sufficient to counter the hyperkalemia in the present case. Urine output was monitored and the fluid therapy was repeated accordingly. Balanced electrolyte solutions such as Ringer lactate was preferred over normal saline in cats with urethral obstruction, as studies have reported that there was no difference in the rate of decline of potassium, whereas the acid-base imbalances were corrected more rapidly in cats treated with balanced electrolyte solutions such as lactated Ringer's (George and Grauer, 2016). Proton pump inhibitors (pantoprazole

Fig. 1. Haematuria

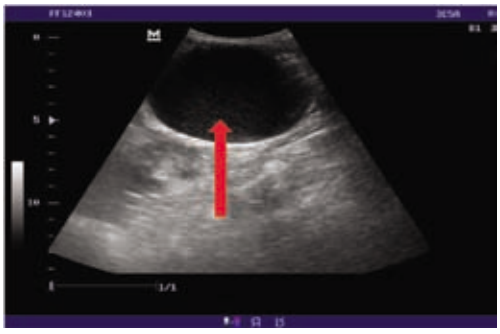

Fig. 3. Distended bladder with thickened wall (2.8 mm) and hyperechoic sediments on ultrasonography

Fig. 2. Distended bladder on lateral survey radiograph

Fig. 4. Improvement noticed after a week of treatment

@ 1 mg/kg q 24 h intravenously), anti-emetics (ondansetron @ 0.5 mg/kg q 12 h intravenously), analgesics (butorphanol @ 0.2 mg/kg q 12 h intravenously) (Westropp and Buffington, 2016) and anxiolytic - glycosaminoglycan supplement (Furinaid plus @ 6 ml/day first 14 days followed by 4 ml/day next 14 days given according to the manufacturers recommendation) were advised. The anxiolytic component in the Furinaid plus was L-Tryptophan, a precursor of serotonin, which would be beneficial in relieving anxiety in cats with FIC (Forrester and Towell, 2015). As per Hostutler *et al.* (2005), the objectives of GAG supplementation was to enhance it's absorption by the damaged urothelium, decrease the permeability of urothelium and to reduce the inflammatory changes. The treatments were repeated according to the response and the animal was evaluated for one week. Significant improvement was observed after a week of treatment (Fig. 4) and the catheter was removed on the seventh day of treatment, followed by repeated urine culture to identify iatrogenic infection if any.

Dietary and managemental changes for stress reduction (MEMO therapy) were instituted as a preventive measure to prevent further episodes of LUTS. Dietary modifications involved changing the diet to a therapeutic urinary diet (Hills c/d Multicare diet) along with managemental changes to increase water intake. Evidence based studies suggest that only therapeutic urinary diets give satisfactory results in FIC (Kruger *et al*., 2015). The managemental changes as a part of MEMO therapy for stress reduction included provision of a core space, avoiding stress from external environment such as inter-cat conflict, guests and babies, provision of enough feeders and waterers, proper management of litter box, improving owner animal interaction and

avoiding sudden changes in routine. Multi-model environmental enrichment therapy was found to be beneficial in cats with FIC as it reduced the concentration of catecholamines, there by reducing the number and severity of recurrent episodes of FIC (Buffington *et al.,* 2006).

Summary

Urethral obstruction is always presented as an emergency. Treatment aims at management of dehydration, metabolic acidosis, electrolyte imbalances such as hyperkalemia and hypocalcaemia, pain relief and relieving urethral obstruction either by catheterisation or surgical procedures. Feline idiopathic cystitis is always a diagnosis of exclusion and the management involves drug therapy, dietary therapy and stress reduction. There is no cure for FIC and the managemental changes are of great importance to prevent the recurrence of LUTS. With dietary management and MEMO therapy, the quality of life can be improved in cats with FIC.

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Conflict of interest

The authors declare that they have no conflict of interest.

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