

Feline Cystitis in Himalayan Cat: *a case report*

Dodik Prasetyo^{1*} and Gede Eko Darmono²

¹⁾Lecture of Veterinary Medicine Faculty at Brawijaya University, Malang, Indonesia

²⁾Student of Veterinary Medicine Faculty at Brawijaya University, Malang, Indonesia

*e-mail: drh.dodik_prasetyo@yahoo.com

Abstract

Molly is male Himalayan's cat with age 2 years old. He comes to Education Animal Clinic of Veterinary Medicine Faculty at University of Brawijaya Malang with owners. Molly comes with complaints of vomiting and previously with dysuria less 2 days and found blood in urine drops. Physical examination are present the temperature 37.6°C, pulsus frequency 104/minute and respiration frequency 28/minute with the condition of mild dehydration. Abdominal palpation shows distention on vesica urinary. Hematology and blood chemistry examination show thrombocytopenia (89.0 x10³/μL, range 300-800x10³/μL), increase levels of SGPT (172.3 U/L, range 8.3-52.5 U/L), SGOT (95.8 U/L, range 9.2-39.5U/L) and uremia (50.0 mg/dL, range 20.0-30.0 mg/dL). Urinalysis examination (Verity ®) show pH 9.0 (range 6.0-7.5), leukocytes (+), nitrite (-), urobilinogen (-), protein 100 (range 15-30 mg/dL), blood (+), specific gravity 1.01 (range 1.036-1.060), ketone (-), bilirubin (-) and glucose (-). Macroscopic examination of urine shows red color (hematuria), dense and cloudy. Microscopic examination of urine with crystals of struvite types found in moderate. Radiography examination shows full of vesica urinaria. The examination of ultrasonography on vesica urinaria showed thickening of the wall vesica urinaria and sedimentation of crystals are hyperechoic. Treatment of cystitis use catheterization and flushing with NS of vesica urinaria, fluid therapy use Ringer's Lactate, antiemetic agent (Ranitidine, 2.5 mg/kg i.m. q24h), analgesics (Ketoprofen, 2 mg/kg i.m. q24h) and growth booster and increase durability of the body, i.e. Hematopan® and Biodin® each 0.15 mL i.m. q24h. Daily therapy uses antibiotic (Doxycycline, 10 mg/kg p.o. q12h), wrecked crystal agent (Keji Beling®, ½ capsul/day p.o.) and vitamin A (10.000 IU/day p.o.), injection of analgesic (Ketoprofen, 2 mg/kg i.m. q12h) and growth boosters and increase durability of the body (Hematopan® and Biodin® i.m. q24h) as well as diet feeding Royal Canine Urinary s/o® for cat. Treatments for 7 days showed significant changes, that is normal urinary and does not hematuria

Keywords: cystitis, dysuria, hematuria, struvite, vesica urinaria

1. INTRODUCTION

Cystitis is an inflammation of the bladder that often occurs in pet animals, as part of the infection in the urinary tract. Clinical symptoms of cystitis, which dysuria and hematuria. Cystitis causes thickening of the urinary bladder wall (Widmer *et al.*, 2004). The incidence of cystitis in cats in Indonesia has not been published in full. An average of 6 cases of diseases of the urinary tract in cats every month was reported (Fauziah, 2015). The main problems of the urinary tract diseases are found: *Feline Interstitial Cystitis* (FIC) of 55% -69% and *Urolithiasis* of 13% -28% (Hostutler *et al.*, 2005). Diagnosis of cystitis can be obtained through anamnesis, abdominal palpation, physical examination, clinical signs, urinalysis, hematology and blood chemistry examinations, uroendoscopy, and ultrasonography (USG) and radiography (Widmer *et al.*, 2004). Cystitis diagnose are associate with the way to treat this diseases as right as efficient and appropriate with the cause of cystitis.

2. MATERIAL AND METHOD

Molly: a male Himalayan's cat, 2 years old. Molly comes to Education Animal Clinic of Veterinary Medicine Faculty at University of Brawijaya Malang with owners Mr. Andy on January 9, 2017 with complaints of vomiting, anorexia and lethargy. Earlier on November 18, 2016 came with a complaint cannot urination (dysuria) in less than 2 days.

Physical examination and laboratory examination as methods are performed, palpation on the abdominal area, the catheterization of vesica urinary via penis, urinalysis examinations, hematology and blood chemistry examinations, ultrasound and radiography.

3. TREATMENT AND RESULT

Anamnesa animal shows vomite, anorexia, lethargy and previously experienced was dysuria. General condition of cat: temperature: 37,6°C, pulse 104 beats/ minute and frequency of breathing 28 times / minute. Physical examination of the abdomen palpation showed distension in the bladder. Urinary bladder was catheterization showed difficulty to enter that indicates urolit. The result of VU catheterization was present of blood in large quantities of urine (Fig. 1). Hematology and blood chemistry as laboratory examination show thrombocytopenia ($89.0 \times 10^3/\mu\text{L}$, range $300-800 \times 10^3/\mu\text{L}$), increase levels of SGPT (172.3 U/L, range 8.3-52.5 U/L), SGOT (95.8 U/L, range 9.2-39.5U/L) and uremia (50.0 mg/dL, range 20.0-30.0 mg/dL).



Fig.1. Showed hematuria in urine (containing blood) and flakes like nidus on sediment.

Urinalysis examination (Verity ®) show pH 9.0 (range 6.0-7.5), leukocytes (+), nitrite (-), urobilinogen (-), protein 100 (range 15-30 mg/dL), blood (+), specific gravity 1.01 (range 1.036-1.060), ketone (-), bilirubin (-) and glucose (-). Macroscopic examination of urine shows red color (hematuria), dense and cloudy. Microscopic examination of urine with crystals of struvite types found in moderate

Radiographic examination showed urinary bladder in a state of full and cannot be found radiopaque mass (Fig. 2a). Ultrasound examination of the urinary bladder reveals thickening of the bladder wall and found a few grains or crystals sedimentation are hyperechoic (Fig. 2b)

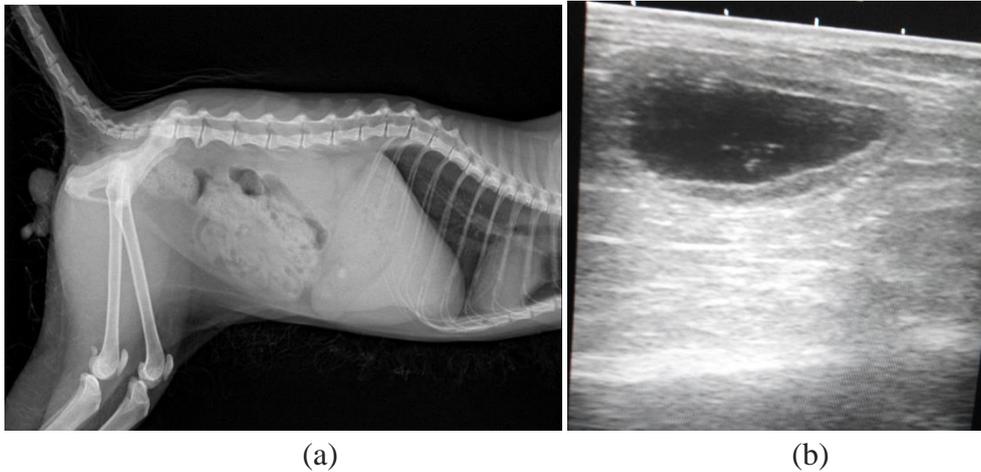


Fig. 2. (a) Radiographic examination: distention of VU full fills with urine and not found radiopaque mass. (b) USG examination: thickening of the bladder wall and found a few grains or crystals sedimentation are hyperechoic.

The first medical treatment is use catheterization via penis into bladder and flushing (out urine / in normal saline fluid, repeat it until the result of flushing looks clear) of vesica urinaria, fluid therapy use Ringer's Lactate, antiemetic agent (Ranitidine, 2.5 mg/kg i.m. q24h), analgesics (Ketoprofen, 2 mg/kg i.m. q24h) and growth booster and increase durability of the body, i.e. Hematopan[®] and Biodin[®] each 0.15 mL i.m. q24h. Daily therapy uses antibiotic (Doxycycline, 10 mg/kg p.o. q12h), wrecked crystal agent (Keji Beling[®], ½ capsul/day p.o.) and vitamin A (10.000 IU/day p.o.), injection of analgesic (Ketoprofen, 2 mg/kg i.m. q12h) and growth boosters and increase durability of the body (Hematopan[®] and Biodin[®] i.m. q24h) as well as diet feeding Royal Canine Urinary s/o[®] for cat. Treatments for 7 days showed significant changes, that is normal urinary and does not hematuria

4. DISCUSSION

Cystitis is an inflammation of the bladder which signed pain in the abdomen, dysuria and hematuria. Another clinical symptoms: depression, weakness, vomiting, decreased appetite, usually accompanied bottom urinary tract infection, severe blockage (debris and crystals), uremia, hematuria, often licking the genital area and maturation when urination due to illness (Nelson *et al.*, 2003). Vomiting in case of cystitis caused by stimulation of the chemoreceptor trigger zone (CTZ) by ureum's toxin, a decrease in gastric secretion and increased gastric acid secretion, and gastrointestinal irritation by toxins of urea (Vaden, 2010). The increasing of urea in the blood can cause uremic gastropathy at the gastric mucosa, that makes gastric hormone to initiate production of stomach acid increased (Elliot and Grauer, 2007). Dysuria is caused by debris or crystals (struvite) which inhibits the flow of urine expenditure. Dysuria condition has direct relation with distention condition of bladder that makes urine in the bladder cannot be removed outside normally. Hematuria on cystitis condition can also associated with bladder inflammation and the trauma it caused by struvite (urolithiasis).

Hematology and blood chemistry examination showed the condition of thrombocytopenia, elevated levels of serum glutamic oxaloacetate transaminase (SGPT), serum glutamic piruvate transaminase (SGOT) and uremia. Thrombocytopenia level under 20,000 that is associated with spontaneous bleeding in the long term and increase bleeding time of petechiae /

ecchymoses (Kemenkes RI, 2011). Increasing levels of SGPT and SGOT were associated with the kidneys disorders. SGPT levels are also found in the heart, muscle and kidney (Kemenkes RI, 2011). SGOT found in the heart, liver, skeletal muscle, kidney, brain, spleen, pancreas and lungs (Kemenkes RI, 2011). Increasing of urea by significant in the blood which indicates the kidney disorders. Urea product will be excreted through the kidneys, when the kidneys were damage, it would result in the accumulation of urea in the blood circulation (Scotham and Scott, 2008).

Urinalysis examination shows urine pH 9.0 in an alkaline urine (normal 6.5 to 7.0). Alkaline condition of urine which cause the formation of crystals, such as struvite. This is consistent with the results of microscopic examination were found struvite crystals. MgO₂ ions and MgSO₄ ions on dry cat food will make the urine alkaline. Alkaline urine will make Mg ions, and ammonium phosphate will be crystallizing to struvite crystals forms. Crystals will make obstruction of the bladder, urethra and ureter. Bacterial infections can increase the formation of struvite because the bacteria that infect will produce urease, it will make increasing of urine pH becomes alkaline. Macroscopic examination of the urine show the presence of red color in the urine, it caused by inflammation and obstruction of bladder, ureter, and urethra which contains of hemoglobin (Wijaya, 2014). Turbid urine can be caused by a nidus, bacteria, sediment such as epithelial, leukocytes and erythrocytes in large quantities (Wijaya, 2014).

Proteinuria can be indicating an injury of glomerular membrane that makes failure of protein filtration which presence protein into the urine. Proteinuria in cats always connected with experience of hemorrhagic result of trauma or inflammation and periuria in cats (Nelson and Couto, 2003). Positive blood values on the reaction dipstick result were caused by the trauma or pathological inflammation, urolithiasis and urinary tract diseases. Decreasing of urine specific density, it may caused by disturbance of reabsorption regulation in the tubulus that makes increasing reabsorption of certain substances in the proximal tubule, loop of Henle, distal tubule or tubulus collectivus, which causes the substances excreted will be reduced and the urine specific density be lower (Damayanti *et al.*, 2015). Radiographic examination show distension in the bladder and not found any crystals that are radiopaque. Ultrasound examination showed a thickening of the walls of the bladder and found a hyperechoic mass. Thickening of the walls of the bladder can be caused by an inflammatory reaction due to trauma or pathological. This is having same corellational with Widmer *et al.* (2004) cystitis can make thickening of the urinary bladder wall. Hyperechoic mass in the urinary bladder showed the presence of crystals in the urinary bladder.

Catheterization and flushing action are spending action of urine from the bladder using a catheter. Fluid therapy Ringer's Lactate is intended to replace lost fluids in the body from dehydration and bleeding. Ranitidine is used as an antagonist histamin₂ (H₂ blockers) whose role in lowering gastric acid secretion (Papich, 2011). Giving of ketoprofen are drugs known as NSAIDs (non-steroidal anti-inflammatory drugs), which acts as an analgesic and anti-inflammatory. Ketoprofen inhibits the cyclooxygenase pathway (COX) and lipoxigenase (Allen *et al.*, 1998). Giving Hematopan® and Biodin® aim to spur growth and hematopoietika, reinforcing the muscles and endurance. Doxycycline is a bacteriostatic antibiotic that works by inhibiting the formation of proteins (Ramsey, 2008). Keji Beling® a plant extracts Serococalycis Folium, Orthoriplunis Sonchi folium folium and useful for treating urinary stones, inhibits the formation of kidney stones and gallstones cleanse the urinary tract and release urine. Vitamin A is a vitamin that plays a role in regulation of gene expression that consists of tretinoin and isotretinoin (Ramsey,

2008). Royal canine urinary s / o® as a diet feeding has function to creating an urinary tract conditions that can inhibit the formation of struvite and calcium oxalate crystals

REFERENCE

- Allen, D.G., J.K. Pringle, D.A. Smith and W.K. Pasloske. 1998. *Handbook of Veterinary Drugs Second Edition*. Lippincott-Raven Publisher. Philadelphia USA.
- Damayanti, L., P. Trisunuwati dan S. Murwani. 2015. *Efek Perasan Daun dan Tangkai Semanggi Air (Marsilea crenata) Terhadap Kualitas Urin Pada Hewan Model Urolithiasis Tikus Putih (Rattus norvegicus)* [Skripsi]. Program Studi Pendidikan Dokter Hewan Program Kedokteran Hewan Universitas Brawijaya. Malang.
- Elliot, J and G.F. Grauner. 2007. *BSAVA Manual of Canine and Feline Nephrology and Urology*. British Small Animal Veterinary Association. USA.
- Fauziah, H. 2015. *Gambaran Cystitis melalui Pemeriksaan Klinis dan Laboratoris (Uji Dipstik dan Sedimentasi Urin) pada Kucing di Klinik Hewan Makassar* [Skripsi]. Program Studi Kedokteran Hewan Universitas Hasanuddin. Makassar.
- Hostutler, R.A., D.J. Chew and S.P. DiBartola. 2005. *Recent Concept in Feline Lower Urinary Tract Disease*. *Veterinary Clinics Small Animal*. 35:147-170.
- Nelson, R.W. and Couto, C.G. 2003. *Small Animal Internal Medicine 3rd Edition*, Mosby Inc. Missouri, London. Scotham, S.L. and M.A.Scott. 2008. *Fundamental of Veterinary Clinical Pathology*. Blackwell Publishing. USA.
- Papich, M. G. 2010. *Handbook of Veterinary Drugs 3rd ed. Small and Large Animal*. Elseveier Saunders.
- Ramsey, I. 2008. *BSAVA Small Animal Formulary*. British Small Animal Veterinary Association. England.
- Vaden, S.L. 2010. *Effective Management of Familial Renal Disease in Dogs and Cat*. Proceedings of the International SCIVAC Congress 2010. Italy.
- Widmer, W.R., D.S. Biller and G.A. Larry. 2004. *Ultrasonography of the Urinary Tract in Small Animals*. *Journal of the American Veterinary Medical Association*. 225(1):46-54.