

Therapeutic Management of Concomitant Pyometra and Babesiosis in a Bitch

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Abstract

A bitch was presented with history of anorexia, purulent vaginal discharge, vomiting and lethargy since three days. Clinico-gynaecological examination revealed distended abdomen and on ultrasonographical examination, multiple anechoic sacculations and enlarged spleen were observed. Hemato-biochemical examination revealed leucocytosis, decreased platelet count increased BUN and creatinine and peripheral blood smear showed negative for hemoprotozoas. The animal was treated for pyometra with a combination of Dinoprost tromethamine, Mifepristone, Amoxicillin/ Sulbactam and Pantoprazole. Follow up on seventh day revealed decrease in diameter of pus pockets and persisting decrease in platelet count. Blood sample was subjected to PCR and confirmed *Babesia gibsoni* infection. Treatment for babesiosis with triple antibiotics was followed up with Doxycycline, Clindamycin and Metronidazole. A review examination on 25th day revealed decrease in pus sacculations, marked increase in platelet count and reduction in WBC count. The animal recovered successfully from pyometra and babesiosis.

Keywords: Babesiosis; bitch; pyometra

Introduction

Pyometra is a potentially life-threatening septicaemic and toxemic uterine infection associated with hormonal and bacterial involvement in bitches. Depending on patency of cervix, pyometra classified into two types *i.e.* open and closed (Jitpean *et al.*, 2017). Babesiosis is a hemoprotozoan disease which is tick-borne in nature. The common signs and symptoms seen are hemolytic anemia, icterus and hemoglobinuria, fever, lethargy and thrombocytopenia. In babesiosis, there will be systemic inflammatory response syndrome (SIRS) and multiple organ dysfunction syndromes (MODS) in complicated cases (Matijatko *et al.*, 2010). Pyometra in later stages can progress to toxic shock, multiple organ failure and death in bitches (Sant'Anna *et al.*, 2014).

Diagnosis of pyometra can be done by vaginoscopy, cytology, sonography and X-ray examinations (Schafer-Somi, 2015), including serological tests (Rautela and Katiyar, 2019), full blood counts, general chemistry profile evaluation and urinalysis. Transient parasitemia in early infection or low

parasitemia in chronic cases may make the microscopic detection of *Babesia* organisms in thin blood smears difficult (Bourdoiseau, 2006). A more sensitive and reliable method is performing PCR analysis in detecting *Babesia* organism's DNA. Though ovario-hysterectomy remains the choice for pyometra due to chance of recurrence, the dog was medically managed with medications for successful recovery.

History and Clinical Diagnosis

A four year old nulliparous spitz bitch was presented with history of vaginal discharge which was foul smelling. The dog was off-feed since few days and also exhibited lethargy, dullness and depression on physical examination. The temperature was 39.3°C and conjunctival membrane was pale, abdominal distension was also noticed. Blood was collected for hemato-biochemical examination and it revealed - leucocytosis (WBC 45×10³/μL), decreased platelet count (30,000/μL of blood) increased BUN (55 mg/dl), creatinine (1.7 mg/dl) and peripheral blood smear showed negative for hemoprotozoa. As babesiosis and pyometra is known to cause renal dysfunction (Stone *et al.*, 1988), urine was collected for urine analysis and revealed increased Cr(Creatinine) indicating proteinuria. On microscopic examination of urine, no crystals and casts could be detected.

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Fig. 1: Dull, depressed, anorexic bitch with purulent vaginal discharge

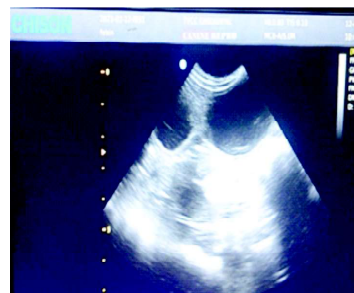
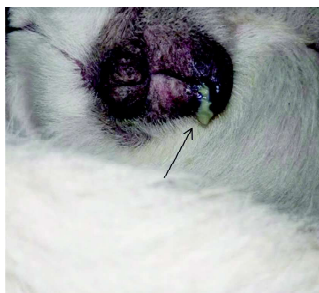


Fig. 2: Sonogram showing multiple pus pockets of approximately 2.2 cm in diameter

Ultrasonography was also performed indicating multiple anechoic pus pockets which were 2.2 cm in diameter. The animal was stabilized with fluids and further treatment was followed up. After seven days of treatment, ultrasonography and hemato-biochemical tests revealed decrease in diameter of pus pockets (0.3cm) and persisting decrease in platelet count (40000/ μ L of blood). Blood sample was subjected to PCR that confirmed *Babesia gibsoni* infection. Treatment for Babesia with triple antibiotics according to Almendros *et al.*, 2020 with supportive renal supplements was also given. The animal had an uneventful recovery.

Treatment

On evaluation of condition of the dog, it was stabilized with supportive therapy by providing parenteral fluids such as lactated ringers with shock dose of 90 ml/kg/hr. Trans abdominal ultrasonography revealed pyometra with thrombocytopenia. The animal was treated for pyometra with a combination of Dinoprost tromethamine (at 0.1 mg/kg, SC, bid, 5 days), Mifepristone (at 2.5 mg/kg, po, bid, 5 days (Ahuja *et al.*, 2019). Amoxicillin and Sulbactam (at 12 mg/kg) and Pantoprazole (at 1 mg/kg) sid, IV was also followed up for 7 days. After seven days there was decrease in diameter of pus pockets (0.3cm) and persisting decrease in platelet count (40000/ μ L of blood) was still present. Blood sample was subjected to PCR and confirmed *Babesia gibsoni* infection. The triple antibiotic therapy followed up with Doxycycline (at 5 mg/kg, po, bid, 21 days), Clindamycin (at 25 mg/kg, po, bid, 21 days) and Metronidazole (at 20 mg/kg, po, bid, 21 days). Renal supportive (Renodyl^a at 1 tab

per day) was also given. The dog had completely regressed pus pockets by 25th day and on normal hemato-biochemical examination, the animal had marked increase in platelet count (1,27,000/ μ L of blood) and reduction in WBC count (12.5×10^3 /l). The dog had a successful recovery.

Results and Discussion

On presentation of the dog, it had purulent vaginal discharge. Physical examination revealed dullness, depression and anorectic. Ultrasonography revealed pus pockets which were 2.2 cm in diameter. When peripheral blood smear was taken, it was negative for blood parasites. The absence of Babesia organisms in thin blood smear might have been due to the low and often intermittent parasitemia or the chronicity of infection (Irwin, 2009). As there was thrombocytopenia and the animal was off-feed, supportive therapy was given with fluids and antibiotics. Pyometra was treated with combination of Dinoprost tromethamine and Mifepristone. Initial treatment was aimed to stabilize the dog. Fluid therapy was done to avoid possible dehydration and reduce renal toxic shock risk (Ewald, 1961). As the animal still had thrombocytopenia after five days of fluid therapy, a confirmatory PCR confirmed babesiosis. Hence, a combination therapy with Clindamycin (at 25 mg/kg PO q 12 hours), Metronidazole (at 15 mg/kg PO q 12 hours) and Doxycycline (at 5 mg/kg PO q 12 h) for 21 days was followed. This combination boosts innate immunity and is known as the Marshall protocol (Nandini *et al.*, 2016). The presence of tick infestation and *B. gibsoni*, including the exhibited clinical signs, hematological alterations, microbial growths, cytological presentation and the engorged uterine horns with multi-organ histopathological changes

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indicated a case of concurrent canine babesiosis and pyometra. Canine babesiosis is reportedly immunosuppressive (Adachi *et al.*, 1993). This could have probably predisposed the bitch to pyometra. Animal recovered successfully on follow up after 25 days, pus pockets had regressed completely with increase in platelet count leading to successful and uneventful recovery of the dog.

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