

SYSTEMIC INFLAMMATORY RESPONSE SYNDROME (SIRS) IN BITCHES AFFECTED WITH PYOMETRA

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This study was conducted on 18 pyometra affected bitches presented to the Department of Veterinary Gynaecology and Obstetrics, Veterinary College, Bengaluru. The patients were diagnosed as pyometra based on physical examination and abdominal Ultrasonography. A blood sample was collected for routine haemato-biochemical examination. Out of 18 bitches, 14 patients were diagnosed as open pyometra and rest of were closed pyometra. All the 18 patients were positive for SIRS upon evaluation. Mortality rate was 11.11%. Rest of the patients were stabilized with supportive therapy before opting for treatment. 15 patients underwent ovariohysterectomy and one patient was subjected to antiprogestin therapy and all 16 patients recovered uneventfully.

Keywords: Bitch, Pyometra, SIRS.

Pyometra is a disease that usually occur -s during diestrus in intact adult females. It is characterized by an inflammatory exudate and uterine bacterial colonization associated with cystic endometrial hyperplasia (CEH). The hematological and biochemical abnormalities commonly found during the disease are leukocytosis with neutrophilia. Systemic inflammatory response syndrome (SIRS) is a clinical manifestation of the organism in response to an initial stimulus severe enough to produce a systemic release of inflammatory mediators. Sepsis is a disease manifested by SIRS of infectious origin (Purvis and Kirby, 1994). Critically ill patients with SIRS are more likely to develop multiple organ dysfunction syndrome (MODS), although even those mildly affected may suffer from SIRS and MODS if a secondary stimulus occurs (Fransson, 2003). Severely affected bitches with SIRS may develop multiple organ dysfunction syndrome (MODS). SIRS and the serum creatinine level can be used as prognostic markers of canine pyometra because the presence of SIRS and creatinine levels above 2.5mg/dl were associated with morbidity and mortality (Sant'Anna *et al.*, 2014). Therefore, the aim of this study was to evaluate SIRS, haematological and biochemical changes in dogs with closed and open pyometra.

Part of M.V.Sc. Thesis

Materials and Methods

This study was conducted on patients presented to the ARGO Dept., Veterinary College Bangalore. Eighteen bitches diagnosed for pyometra were randomly assigned to the study. They were evaluated for SIRS. Temperature, heart rate, respiratory rate and total leukocyte count were recorded in every case. Blood sample for biochemical parameters was collected. Serum was separated and sent for estimation. All the patients were given supportive therapy by administering colloids intravenously for three consecutive days. 15 patients were subjected to ovariohysterectomy and 1 patient was treated medically with mifepristone and misoprostol at the dose rate of 5mg/kg b.wt., I/M. for two days and 5µg/kg b.wt., I/M. for three days respectively.

Results and Discussion

Clinical and biochemical parameters were recorded and the mean of those parameters are as follows;

Four patients were having body temperature below 100.4 °F and three other were having body temperature more than 104°F satisfying the range considered for SIRS evaluation (<100.4°F or >103.46°F). All the patients were in hyperventilation and maximum recorded was 100 breaths/ min in two patients. Though the average value does not satisfy the criteria for the SIRS evaluation considering heart rate as a parameter (>160

beats/min), only one patient was having heart rate of 162 beats/ min. Average total leukocyte count found to be higher than the range for SIRS evaluation [WBC (x 10³/μL) - <4, >12]. Only one patient was having total leukocyte count within the range for evaluation i.e, 10700 cells/ μL. Though value depicts the renal function, the highest recorded serum creatinine value was 21mg/dL thus increasing the average value. All the patients were having S.G.P.T values within the normal range 32.72(±) 5.09.

All the 18 patients were positive for SIRS. Whilst mortality was 11.11%. One of the case was treated medically with mifepristone and misoprostol and recovered uneventfully. The remaining patients were treated surgically by ovariohysterectomy and uneventful recovery was evident. Bacteremia and septicemia is evident in pyometra and these bacteria are hematogenously spread. Gram negative bacteria release a biologically harmful endotoxin (lipopolysaccharide) during the disease process and also following the use of bacteriocidal or bacteriostatic antibiotics. Inflammation secondary to endogenous cytokine production has been linked to the pathogenesis of systemic inflammatory response syndrome (SIRS) and has been associated with poor outcomes as also reported by Gebhardt *et al.* (2009) and Yu *et al.* (2010) also. Systemic complications of pyometra are brain thromboembolism following septicemia, sepsis, renal abnormalities, hypoglycemia, hepatocellular injury, cardiac arrhythmias and clotting abnormalities. Hence in this condition we can find elevated temperature, serum creatinine and S.G.P.T. The other changes observed in pyometra affected bitches include acid base values, hematologic values, intrahepatic cholestasis, respiratory alkalosis with metabolic compensation and metabolic acidosis. Uterine inflammation often is accompanied by glomerular, or tubular dysfunction, or both. Thus serum creatinine values are elevated. Among the variables studied, the presence of SIRS and elevated serum creatinine >2.5mg/mL were effective in predicting the worsening of the disease and can be used as prognostic markers of canine pyometra. (Sant'Anna *et al.*, 2014). Critically ill patients with SIRS are more likely to develop multiple

organ dysfunction syndrome (MODS), although even those mildly affected may suffer from SIRS and MODS if a secondary stimulus occurs (Fransson, 2003). However, other studies found no association between the presence of SIRS and morbidity and/or mortality in dogs with pyometra as reported by Pelander *et al.* (2008) and Hagman *et al.* (2011). Supportive therapy is essential to counteract the shock by means of fluid therapy so as to prevent the animal going into MODS.

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