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The effect of pyometra on SOD, TBARS, CAT, C-reactive protein, tumour necrosis factor-α, and interleukin-6 in dogs

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Pyometra affects almost 23-24 % of intact bitches (incidence varies between the breeds) when they are in mature adult or geriatric period in the lifetime from 4 weeks to 4 months after the estrus and this makes pyometra one of the most important diseases in intact bitches¹. Systemic inflammatory response syndrome (SIRS) is a response to stimulus severe enough to cause the release of inflammatory mediators into the blood stream. Pyometra is a bacterial infection of the uterus and sometimes turns into SIRS when it is not treated adequately or as an emergency. Increased levels of reactive oxygen species (ROS) in a cell may be a cause for DNA damage and it leads to inhibition of some proteins. Decreased antioxidant levels called literally oxidative stress may be a cause of many diseases². The study were performed on 27 dogs with pyometra and 8 clinically healthy dogs (served as controls) in dioestrus. Currently, there is no available literature that shows antioxidant status of bitches with pyometra. The aims of the study were 1) measure serum concentrations of SOD, CAT, TBARS, CRP, TNF-α and IL-6 in healthy old intact female dioestrus dogs, 2) determine whether these parameters were associated with severity of the pyometra and used as a diagnostic marker in pyometra bitches 3) determine whether SOD, CAT, TBARS were associated with the inflammatory response by the body, 4) determine whether these oxidative stress parameters and inflammatory mediators were differentiated during the healing period after fifteen days of the ovariohysterectomy surgery, Blood samples were collected from the cephalic or jugular vein and both group of dogs underwent ovariohysterectomy. Blood sampling were performed two times just before and two weeks after the ovariohysterectomy. Complete blood cell count and TBARS, SOD, CAT, TNF-α, IL-6 and CRP were evaluated in the samples. Additionally, slides were prepared for each blood sample (both pyometra and control bitches). The slides of 35 blood smear were analyzed for the leucocyte profile and WBCs enumerated. Totally 100 cells were numerated per slide, neutrophil leucocyte segmentation index were calculated. The most common clinical signs of pyometra cases were vaginal discharge, inappetance, polyuria/polydipsia, lethargy, weight loss, and vomiting, respectively. Neutrophil segmentation index was high in two dogs in pyometra group, before surgery, 15 days later one of them had still high segmentation index. Band neutrophil numbers were higher in pyometra and dioestrus group at day 0. SOD, TBARS, CRP, IL-6 and TNF-α were found statistically different between the groups.