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Transforming growth factor beta 1 in the cervix of cyclic bitches and those with pyometra
Sayamon Srisuwatanasagul\textsuperscript{A}, Nawarus Prapaiwan\textsuperscript{A}, Sukanya Manee-in\textsuperscript{B}, Kongkiat Srisuwatanasagul\textsuperscript{A}, Atthaporn Roongsitthichai\textsuperscript{C}
\textsuperscript{A}Department of Veterinary Anatomy, Chulalongkorn University, Pathumwan, Bangkok, Thailand
\textsuperscript{B}Department of Clinical Sciences and Public Health, Mahidol University, Salaya, Nakhon Pathom, Thailand
\textsuperscript{C}Faculty of Veterinary Sciences, Mahasarakham University, Maha Sarakham, Thailand
ssayamon@chula.ac.th

Transforming growth factor beta1 (TGF\beta1) plays important roles in the regulation of cellular growth, proliferation and differentiation. In addition, it may have a role in extracellular matrix synthesis\textsuperscript{1,2} which can affect the opening and the closure of the bitch’s cervix. However, the studies in relation to roles of TGF\beta1 signaling in the bitch cervix remained unclear. During the estrous cycle, the dynamic of cervical patency was observed in normal bitches and also in those with open and closed-cervix pyometra\textsuperscript{3}. Therefore, the objectives of this study were to investigate the presence of TGF\beta1 in the bitch’s cervix during different phases of the estrous cycle and that in those with pyometra. In normal bitches, eighteen cyclic bitches were classified into 3 groups; follicular (n =6), luteal (n=6), and inactive phase (n=6). In pyometra group, bitches were categorized into closed cervix (n = 6) and open cervix (n = 6) pyometra. Normal bitches in luteal phase were used as a control group. The localization of TGF\beta1 was studied by using immunohistochemistry method. The results were evaluated by the image analysis software CellQuant (3DHISTECH, Budapest, Hungary) after whole-slide digitalization (Pannoramic Scan, 3DHISTECH) was conducted. The results were shown as H-score (mean ± SD). The results revealed that TGF\beta1 presented in all compartments of the cervix (surface epithelium, lamina propia and muscular layers). In addition, no difference of TGF\beta1 expression was found in any compartment of the cervix during various phases of the estrous cycle. In addition, in the muscular layer of the cervix, the highest expression of TGF\beta1 was observed in closed cervix pyometra group (93.98 ± 8.39) compared to other cyclic groups (P<0.01) (follicular phase 44.89 ± 16.20, inactive phase 47.3 ± 16.43, luteal phase 35.88 ± 16.6). Comparing between pyometra groups, higher expression of TGF\beta1 was always found in closed cervix than in open cervix pyometra though it was not significantly different. These findings suggested that TGF\beta1 took part in pathological status of the bitch’s cervix such as pyometra; it, besides, may also involve with the cervical remodeling between open and closed-cervix pyometra. Nonetheless, the mechanism of cervical patency between closed- and open cervix pyometra has been in need to be more elucidated.