Ultrasononographical changes following PGF$_{2\alpha}$ therapy in canines open type pyometra

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Abstract

Pyometra a hormonally mediated acute (or) chronic polysystemic diestrual disorder and induce high mortality in bitches if not treated. Restoration of fertility may be done with medical treatment. Thirty six bitches of different breeds aged between one to ten years, brought to the small animal obstetrics and gynecology unit, Madras Veterinary College Hospital with open type pyometra were included for this clinical study, these 36 bitches were divided into three groups consisting of twelve bitches in each group, bitches in Group I were treated with PGF$_{2\alpha}$ (Inj Lutalyse – Up John Company) at the dose rate of 250 µg/kg body weight once daily for five days subcutaneously along with selected antibiotics based on antibiogram. Bitches in Group II were treated with PGF$_{2\alpha}$ at the dose rate of 30 µg/kg body weight twice daily for eight days subcutaneously along with selected antibiotics based on antibiogram and bitches in Group III were treated with selected antibiotics alone based on antibiogram parenterally for seven days. clinical study from the above groups with respect to evaluate ultrasonographic findings according to open or closed cervix pyometra in bitches was concluded that clinical recovery in bitches with above treatment protocols with open type can well be accessed through ultrasonography and further Ultrasonography is the best tool for diagnosis canine pyometra.

Keywords: Open cervix pyometra, PGF$_{2\alpha}$, bitches, Ultrasound, Changes

Introduction

Pyometra a hormonally mediated acute (or) chronic polysystemic diestrual disorder and induce high mortality in bitches if not treated (Singh et al., 2010) [17]. Restoration of fertility may be done with medical treatment (Baithalu et al., 2012) [2]. PGF$_{2\alpha}$ increasing myometrial contractions might enhance cervical relaxation and had a luteolytic effect (Gobello et al., 2008) [15]. Pyometra typically affects mature bitches that have undergone repeated estrous cycle (Johnston et al., 2001) [13]. The diagnosis of canine pyometra closed – cervix or open- cervix pyometra is best made with ultrasonography and radiology (Voges et al., 1996) [19]. Young bitches that present with an open cervix pyometra, normal organ function, and a compliant, reasonale owner may be treated with progstaglandin in an attempt to preserve their breeding value (Gilbert et al., 1989) [9].

The normal non gravid uterus cannot be imaged by ultrasonography because of its small size and similar echogenicity to bowel loops. However when the uterus was enlarged due to pregnancy or pyometra, ultrasonography could be useful (Wheaton et al., 1989) [20]. In pyometra the uterus appeared as a well defined tubular structure with hypoechoic to anechoic lumen Bowie et al., 1980 [1]; Nelson and Feldman et al., 1986 [6], Shaw and Ihle et al., 1997 [16], Leib and Monnie et al. 1997 [13].

The uterus had an increased diameter and was folded upon itself so that several sections of each hom could be imaged in a single plane (Arthur et al., 1996) [1]. Johnson et al., (1992) [11] stated that ultrasonography was used to identify exudate in the lumen of the uterus and to assess the thickness of the wall of the uterus, while England et al (1995) [5] reported that use of ultrasonic to distinguish other causes of uterine fluid accumulation (Mucometra and hydrometra) from cases of pyometra was not possible. Renton and Harvey et al., (1993) [13] suggested that the ultrasonography could be used to diagnose pyometra and also to monitor bitches during treatment with exogenous prostaglandin.

Therefore, the aim of this clinical study was to evaluate ultrasonographic findings according to open or closed cervix pyometra in bitches presented for treatment of pyometra.
Materials and Methods
Thirty six bitches of different breeds aged between one to ten years, brought to the small animal obstetrics and gynecology unit, Madras Veterinary College Hospital with open type pyometra were included for experimental study. The confirmative diagnosis of pyometra was arrived based on clinical signs, abdominal palpation, radiography and Ultrasound. These 36 bitches were divided into three groups consisting of twelve bitches in each group (Group I, II and III). Bitches in Group I were treated with PGF\(_{2\alpha}\) (Inj Lutalyse – Up John Company) at the dose rate of 250 µg/kg body weight once daily for five days subcutaneously along with selected antibiotics based on antibiogram. Bitches in Group II were treated with PGF\(_{2\alpha}\) at the dose rate of 30 µg/kg body weight twice daily for eight days subcutaneously along with selected antibiotics based on antibiogram. Bitches in Group III were treated with selected antibiotics alone based on antibiogram parenterally for seven days.

Ultrasonography was performed using Basic Scanner 200 Vet (Pie medical equipments, Holland) with curved linear transducer of 3.5/5 MHz with a radius of 40 mm for recording Ultra Sonograms. All the bitches were subjected to ultrasonography before and at the end of treatment to determine uterine size, thickness of uterine wall and the presence of fluid accumulation within the lumen. Statistical analysis of the data was carried out as per the standard procedure outlined by Snedecor and Cochran et al., (1994)\(^{18}\).

Results and Discussion
Ultrasonography of bitches with pyometra revealed anechoic convoluted tubules in 80.55 per cent of the bitches at the start of the treatment (Day-0). The tortuous convoluted tubules (Plate 3 and 4) also appeared as anechoic circular structures when viewed in a transverse plane. In the present study ultrasonography of bitches with pyometra revealed anechoic tubules in 80.55 per cent of cases, contrary to the present Wheaton et al., (1989)\(^{20}\) reported that ultrasonography was 100 per cent successful in diagnosing pyometra.

Ultrasonography of pyometra where pus filled uterine lumen (Anechoic), Thicketed uterine wall (Endometrium is noticed)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>At the start of treatment</th>
<th>At the end of treatment</th>
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<tr>
<td>Ultrasound</td>
<td>Hyper echoic to anechoic well defined tubular structure in the caudal lumen</td>
<td>Uterus reduced in diameter or could not be visualised</td>
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In ultrasonography pyometra positive uterus had thickened endometrium and irregular (Plate 1 and 2). The luminal cavity included smaller amounts of anechoic fluid than that of closed cervix pyometras. In those bitches failed to respond, the clinical signs persisted, uterine discharge was still present at the end of treatment and the uterus showed no changes and Ultrasonographical- (Table 1)
Conclusion
It was concluded that clinical recovery in bitches with open type pyometra treated with prostaglandin F2 Alpha and antibiotics can well be accessed through ultrasonography. Ultrasonography is the best tool for diagnosis canine pyometra.

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References