Value of Complementary Treatment-induced Prostatic Regression in Percutaneous Drainage of Canine Prostatic Abscesses: A Retrospective Study

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Introduction
Prostatic abscesses are relatively uncommon representing only 2.3% of prostatic diseases in a retrospective study (1) but potentially lethal condition (2). The abscessations develop subsequent to chronic suppurrative prostatitis. Infection of prostatic cysts or early stages of neoplasia are factors, as well (3). Dogs with prostatic abscesses usually present with signs of systemic illness (e.g., pyrexia, anorexia, lethargy) and may show moderate to severe pain during abdominal palpation, defecation and urination. On abdominal ultrasonography, the abscesses present as hypoechoic or anechoic spheric lesions enclosed by an ill-defined thick capsule.

Prostatic abscesses require drainage and adequate antibiotic therapy. Antibiotic therapy alone is considered noncurative because lack of blood supply often hinders penetration of antibiotics into abscesses. Furthermore, most antibiotics diffuse poorly from the bloodstream through intact epithelial barriers into the more acidic prostatic fluid (4). Prostatic abscesses can be drained surgically or by ultrasound-guided percutaneous aspiration (5, 6). Aspirated abscesses or cysts recur in more than 50% of cases (7). Castration is indicative for permanent treatment for benign prostatic hyperplasia (BPH) in the dog because it induces prostatic regression/atrophy. Moreover, castration is recommended as an adjunct therapy to drainage of prostatic abscesses according to its effect on reducing the function of secretory prostatic epithelial cells, subsequently diminishing the potential for persistent infection (8). Previously, we reported a successful treatment for prostatic abscesses in dogs using ultrasound-guided percutaneous drainage in combination with Deslorelin (GnRH agonist) implant to induce temporary prostatic regression (9). The present study aimed to compare the effectiveness of percutaneous drainage of canine prostatic abscesses with or without complementary treatment-induced prostatic regression.

Materials and Methods
A retrospective study of 358 prostatic disorder cases that visited the unit of Obstetrics, Gynaecology and Reproduction at the small animal teaching hospital, Chulalongkorn University, during between February 2013-February 2015 was performed. Of 358 dogs, prostatic abscesses were diagnosed in 22 dogs, aged between 7-17 years, as confirmed by ultrasonographic presence of fluid-filled intraprostatic cavities and hematologic profiles.

Dogs were devided into 2 groups; Group A, dogs that received ultrasound-guided transabdominal needle aspiration alone (n = 7) and Group B, dogs that received a combined treatment of ultrasound-guided aspiration and induction of prostatic regression either castration or once-daily oral administration of finasteride (5α-reductase inhibitor) (Proscar®, Merck & Co., Inc., U.S.A.) (n = 15). Prior to prostatic aspiration, animals were sedated (Tramadol 4 mg/kg BW, subcutaneously, and diazepam 0.5-1 mg/kg BW, intravenously) and ultrasound-guided aspiration was carried out to evacuate prostatic fluid. Figure 1 showed a corresponding decrease in the size of the prostatic cavity following ultrasound-guided aspiration. The volume and characteristic of the aspirated fluid were recorded. The specimens were then summited for bacterial culture and drug sensitivity test. Broad-spectrum antibiotics were given as initial empirical therapy for at least 4 weeks and, if necessary, additional treatments such as fluid therapy, analgesic and/or anti-inflammatory drug were given. Post-aspiration, dogs were scheduled for re-examination at 1- to 4-week interval until full recovery based on clinical sigs and prostatic ultrasonography. Full recovery was defined as the disappearance of prostatic cavity (8-12 weeks re-examination) to the time of the writing of this study. The number of times the dog were aspirated was recorded. Thereafter, follow-up examination was performed at 4- to 8-week interval.
Results and Discussion

Prostatic abscesses was 6.1% (22/358) of prostatic diseases found in this study. All dogs with prostatic abscess were sexually intact with advancing age. Shih-tzu was shown to be the most affected breed (44.4%) among other breeds including Poodle, Beagle, Labrador retriever, Spitz terrier, Thai Bangkaew and mongrel. Clinical signs such as stranguria, constipation or gait abnormality were present in these dogs. In all cases, ultrasonographic appearance of the prostates revealed hypoechoic or anechoic cavity and some cases had more than 1 cystic lesion. Purulent fluid was aspirated from the prostatic cavity using ultrasound guidance, and the amount of pus drained ranged between 1 and 150 ml. No adverse side effects related to aspiration of the prostatic abscesses were observed during the treatment period. The most commonly isolated organisms from the specimens were Escherichia coli followed by Enterobacter spp., Pseudomonas spp., Streplococcus spp., Klebsiella spp. and Staphylococcus spp., respectively. Table 1 presents difference in the number of times the prostatic cavities were aspirated until full recovery between Group A and B.

Table 1 Range, mean, median, mode and standard deviation of the mean (S.D.) of number of times the prostatic cavities were aspirated until full recovery

<table>
<thead>
<tr>
<th>Dogs</th>
<th>range</th>
<th>mean</th>
<th>median</th>
<th>mode</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>5-9</td>
<td>7.3</td>
<td>7</td>
<td>9</td>
<td>1.5</td>
</tr>
<tr>
<td>(n = 7)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group B</td>
<td>1-7</td>
<td>3.2</td>
<td>3</td>
<td>4</td>
<td>1.7</td>
</tr>
<tr>
<td>(n = 15)</td>
<td></td>
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</table>

The interval between aspirations ranged between 2 days - 8 weeks. The treatment duration from the first aspiration to the time prostatic cavities were no longer exist observed by ultrasonographic examination was different between 2 groups (Table 2). None of the dogs, except for 2 dogs in Group B, had recurrent prostatic disorders during the follow-up period, defined as the time from the disappearance of prostatic cavity (8-12 weeks) to the time of the writing of this study. The 2 dogs in group B had recurrent prostatic abscesses observed at 9 and 12 months, respectively, after the last aspiration.

Table 2 Range, mean, median, mode and standard deviation of the mean (S.D.) of treatment duration (weeks) from the first aspiration to the time prostatic cavities were no longer exist

<table>
<thead>
<tr>
<th>Dogs</th>
<th>range</th>
<th>mean</th>
<th>median</th>
<th>mode</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group A</td>
<td>17-63</td>
<td>29.5</td>
<td>23</td>
<td>n/a</td>
<td>16.6</td>
</tr>
<tr>
<td>(n = 7)</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Group B</td>
<td>4-21</td>
<td>8.2</td>
<td>7</td>
<td>4</td>
<td>4.8</td>
</tr>
<tr>
<td>(n = 15)</td>
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Prostatic abscess affects all breeds of dogs and, to our knowledge, no breed predisposing cause has been suggested. However, it is worth mentioning that Shih-tzu was the breed most frequently affected with prostatic abscess found in this study.

A combined treatment of the canine prostatic abscess (Group B) using ultrasound-guided aspiration together with treatment-induced prostatic regression, either surgical removal of the testes or medical administration of finasteride, was shown to be effective and resulted in a clinical significance of shorter recovery period in comparison to ultrasound-guided aspiration alone (Group A). Additionally, the number of times the prostatic cavities were aspirated until full recovery markedly reduced if the treatment-induced prostatic regression was combined. Our findings are in agreement with a previous study demonstrating that, in case of chronic bacterial prostatitis, castration speeds up the resolution of the bacterial infection by decreasing prostatic fluid secretion (8).

In humans, initial treatment of percutaneous drainage of prostatic abscess is considered a technically simple and effective therapeutic procedure (10). Similarly, the findings obtained in the present study showed that this technique was safe and clinical signs resolved in all affected dogs. Although needle aspiration of fluid from prostatic abscesses is associated with the risk for causing iatrogenic peritonitis, the risk for abscess leakage can be reduced by draining abscesses as completely as possible (7). Clinical signs such as difficult to urinate and/or defecate rapidly improved after aspiration due to a consequence of decreases in prostatic size and the degree of compression after removal of fluid. In this study, it was uncertain if recurrent prostatic abscesses seen in 2 dogs in Group B associated with previous pathological conditions. Nevertheless,
regular ultrasound monitoring of the prostatic change is highly recommended even if prostatic cavities are no longer detected to prevent recurrence of the disease. Broad-spectrum antibiotics were given as initial empirical therapy and resulted in satisfied outcome in most cases. However, one dog in group B, Klebsiella infection was resistant to most of antibiotics commonly used in veterinary practice except for Imipenem. The use of effective antibiotics has significantly improved the morbidity of prostatic abscesses, and thus bacterial culture and sensitivity test are essential.

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References