Uterine Disorders Diagnosed by Ventrotomy in 47 Rabbits

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ABSTRACT. The type, ages of occurrence, primary complaints, clinical signs and mortality in forty-seven cases of uterine disorders diagnosed by ventrotomy in rabbits were analyzed retrospectively. Endometrial hyperplasia (29.8%) was most frequently observed, followed by uterine adenocarcinoma (21.3%). Tumorous lesions were seen in 46.8% of the cases. The age of occurrence ranged from two years and two months to seven years and six months, with a peak at four to five years of age. The most common primary complaint was bleeding (62.2%), followed by mammary gland abnormality (12.8%) and increased abdominal circumference (10.6%). Physical examinations revealed mammary gland disorders such as mammary cysts in 31.9% of the cases. Uterine disorders were detected by palpation in 15 out of 32 cases with a primary complaint of bleeding. Ultrasonography showed uterine disorders in 21 out of 24 cases, suggesting that ultrasonography could be useful in the diagnosis of uterine disorders. The outcome seemed to be influenced by physical status rather than malignancy of lesions. The mortality was higher in cases with symptoms such as anorexia, emaciation, severe anemia, and dehydration.

KEY WORDS: adenocarcinoma, endometrial hyperplasia, rabbit, uterine disorder, ventrotomy.

The number of rabbit cases requiring surgical operations has been increasing in animal hospitals. Uterine disorders including endometrial hyperplasia and adenocarcinoma are more frequently reported in rabbits than in dogs and cats [5, 9]. Since uterine adenocarcinoma in rabbits was studied as a human disease model [1], many cases of rabbit uterine disorders have been described. However, most of these were concerned with experimental rabbits [2, 7, 8, 11] and very few involved companion rabbits [5]. This paper deals with a retrospective study of uterine disorders diagnosed by ventrotomy in forty-seven rabbits.

MATERIALS AND METHOD

A total of forty-seven cases of uterine disorders diagnosed by ventrotomy at Saito Animal Hospital (Saitama-shi, Saitama, Japan) and Saito Rabbit Clinic (Kita-ku, Tokyo, Japan) from November 1998 to April 2001 were included in the study. The diagnoses were confirmed by pathological examination of the uterus and culture examinations. In cases which had more than two kinds of disorders, the more malignant one was regarded as the primary disorder, and the rest were considered as complications. The type of disorder, age of occurrence, chief complaint, findings during physical and clinical examinations and the mortality were analyzed.

RESULTS

The cases diagnosed are shown in Table 1. The cases with hydrometra included six primary cases and four with complications, for a total of ten cases. Twenty-five cases had uterine hyperplasia, including 14 primary cases and 11 with complications. The main disorders are analyzed in this report.

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number of cases diagnosed</th>
<th>Number of cases died within 3 months</th>
<th>Mortality (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Endometrial hyperplasia</td>
<td>14</td>
<td>4</td>
<td>28.6</td>
</tr>
<tr>
<td>Hydrometra</td>
<td>6</td>
<td>3</td>
<td>50.0</td>
</tr>
<tr>
<td>Endometrial thrombus</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Pyometra</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Subtotal</td>
<td>25</td>
<td>7</td>
<td>28.0</td>
</tr>
<tr>
<td>Adenocarcinoma</td>
<td>10</td>
<td>2</td>
<td>20.0</td>
</tr>
<tr>
<td>Adenoma</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leiomyoma</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Leiomyosarcoma</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Fibroma mucinosum</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Metastasis of ovarian tumor</td>
<td>1</td>
<td>1</td>
<td>100</td>
</tr>
<tr>
<td>Subtotal</td>
<td>22</td>
<td>3</td>
<td>13.6</td>
</tr>
<tr>
<td>Total</td>
<td>47</td>
<td>10</td>
<td>21.3</td>
</tr>
</tbody>
</table>
and five months, with an average of five years, while that
with adenoma ranged from four years to seven years and
two months, with an average of five years. When the cases
were divided into tumorous and non-tumorous groups, the
age at operation in tumor cases ranged from two years and
ten months to seven years and five months, with an average
of four years and eleven months. On the other hand, the age
of operation of the non-tumorous group ranged from two
years and two months to seven years and six months, with an
average of four years and two months.

The chief complaints for each disease are shown in Fig. 2.
The most frequent chief complaint was bleeding (32 cases
or 68.1%), such as hematurea and/or bloody vaginal dis-
charge. More than 90% of these bleeding cases showed
hemorrhage only at urination, with complaint of bloody
urine. Bleeding complaints were frequent in endometrial
hyperplasia (9 of 14 cases), adenocarcinoma (8 of 10 cases),
endometrial thrombus (4 of 4 cases), and adenoma (4 of 5
cases), but not in hydrometra (only 1 of 6 cases). Enlarged
abdomen was observed primarily in five (10.6%) out of six
cases of hydrometra. Mammary gland disorder complaint
was shown in only six cases (12.8%), but many cases showed mammary gland disorders upon physical examination.
The other chief complaints were abdominal pain in
two cases and pollakiuria in one case. In an asymptomatic
case, the uterine disorder was detected in the course of dif-
ferential diagnosis procedure.

Physical examination revealed mammary gland disorders
in 15 out of 47 cases (31.9%). Percussion indicated fluctua-
tion in all cases of hydrometra (6 cases), and palpation
revealed masses or enlarged uteri in 15 out of 32 bleeding
cases. Severe anemia was detected by blood analysis in 4 of
32 cases.

Ultrasonograph was taken in 24 out of 47 cases, and
radiograph was taken in 5 out of 47 cases for definitive diag-
nosis when diagnosis could not be confirmed by other
examinations. Among 24 cases examined by ultrasonogra-
phy, 21 cases showed signs of uterine disorders as revealed
by the appearance of liquid (serous fluid, blood or pus) or
masses in or out of the uter.

Three cases could not be diagnosed definitively by any
examinations, and ventrotomy finally revealed the uterine
disorders.

Ten of the 47 cases animals (21.3%) died within three
months after surgery, and thirty-seven animals (78.7%)
lived for more than three months. Table 1 shows the type of
uterine disorder and mortality. The mortality was high in
hydrometra (50%) and endometrial hyperplasia (28.6%). In
tumorous and non-tumorous cases, the mortality was 13.6%
and 28.0% respectively. Anorexia was seen in six cases
where prognosis was grave. Most of the animals which died
within three months after surgery showed symptoms such as
anorexia, emaciation, severe anemia or dehydration before
surgery.
As shown in Table 1, endometrial hyperplasia was most frequently observed (14 cases or 29.8%), followed by uterine adenocarcinoma (10 cases or 21.3%). These two disorders have previously been reported to occur commonly in the rabbit [5, 9]. Endometrial disorders frequently detected in rabbits might progress following the process of polyp formation, cystic hyperplasia, adenomatous hyperplasia, and adenocarcinoma [3, 7, 8, 11]. Some reports indicated no association between cystic hyperplasia and adenocarcinoma in rabbits since adenocarcinoma was associated with senile atrophy of the endometrium [1].

Uterine hyperplastic and tumorous lesions might be frequently observed in rabbits rather than in dogs and cats. There was only one case (2.1%) of pyometra, which is frequently seen in dogs and cats, and six cases (12.8%) of hydrometra which is rare in dogs and cats. These differences might be related to the anatomical and/or physiological properties of rabbit uterus.

The age at which rabbits were most predisposed to uterine disorders was four to five years old with few cases in more than six years old (7 cases or 14.9%), as shown in Fig. 1, suggesting that the uterine disorders might be related to aging. There was no correlation between the type of diseases and the age of the animal.

The most common chief complaint encountered was bleeding (68.1%), and most cases showed hemorrhage only at urination. This suggests that uterine disorders can be susceptible in female animals with bloody urination. Since enlarged abdomen was the common chief complaint of hydrometra, this disorder should be included in the differential diagnosis of cases with increased abdominal circumference in female rabbits. In addition, uterine disorders must also be considered in mammary gland disorders (6 cases), abdominal pain (2 cases), and pollakiuria (1 case).

Physical examination showed mammary gland disorders such as mammary cysts in 15 cases (31.9%), agreeing with previous reports [5, 8, 9]. Abdominal percussion might be important in cases with increased abdominal circumference, as fluctuation was detected by percussion in all cases of hydrometra which is rare in dogs and cats. These differences might be related to the anatomical and/or physiological properties of rabbit uterus.

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Physical examination showed mammary gland disorders such as mammary cysts in 15 cases (31.9%), agreeing with previous reports [5, 8, 9]. Abdominal percussion might be important in cases with increased abdominal circumference, as fluctuation was detected by percussion in all cases of hydrometra (6 cases). Since abnormal findings were detected by abdominal palpation in 15 of 32 bleeding cases, thorough palpation can be considered in cases of female rabbits showing signs of hemorrhage. Abnormal findings were also detected in 21 cases out of 24 cases that were subjected to ultrasonographic examination, suggesting that ultrasonography could be useful in the diagnoses of uterine disorders. If diagnosis could not be confirmed by any examination, exploratory laparotomy might be required.

Among the different disorders, hydrometra, hyperplasia and adenocarcinoma led to high mortality (Table 1). However, the outcome seemed to be influenced by physical status of the rabbit rather than the malignancy of the lesions. Since the mortality was higher in cases with symptoms such as anorexia, emaciation, severe anemia, and/or dehydration, it is suggested that medical supportive therapy before and after surgery should also be carried out aggressively. In addition, a thorough evaluation of the physical condition of the animal is very important for accurate prognosis.

Uterine disorders occur frequently in middle to old age among female rabbits [5, 10], and most of these cases need surgical operations, otherwise the prognosis is hopelessly poor. Anemia by continuous hemorrhage, hemorrhagic shock due to rupture of vessels and acute large hemorrhage [2, 4, 9], high pressure exerted to the abdominal organs by hydrometra, rupture of uteri [6, 9], and metastasis of tumor [5, 9] are all possible causes of death. In this study, when the uterine disorder was diagnosed early and appropriate surgical therapy was instituted, the prognosis was fair, although the mortality rate was 21.3%.

REFERENCES