Vulvar Abscess Caused by *Bacteroides* sp. Infection in a Female Dog

*Bacteroides* sp. が分離された雌犬の外陰部膿瘍の  peux

Yoshihiko Sato*

SATO Animal Clinic

佐藤良彦 peux

さとう動物病院

Abstract: A three-year-old, female Miniature Dachshund was presented with soft swelling on the left vulva as well as a solid mass with approximately 2 cm in diameter that was palpated in the deep soft tissue around the vaginal wall. Pus-like fluid was aspirated from the swelling, and contained a large number of neutrophils and bacteria as determined by cytological examination. Therapy consisted of incision and drainage of the swelling to remove the pus, and by washing with an antiseptic solution. In addition, the mass in the deep soft tissue was removed surgically using semiconductor laser surgical unit. After the surgery, the dog was administered by oral ampicillin and cloxacillin for two weeks after the surgery. The skin lesions were completely cured at 10 days after the surgery. Bacterial culture of the pus revealed the presence of *Bacteroides* sp. Histopathologically, the lesion consisted of abscess containing numerous neutrophils and macrophages surrounded by granulomatous tissue. Taken together, the present case was diagnosed with vulvar abscess caused by infection of a rare isolate *Bacteroides* sp.

Key words: anaerobic bacteria, *Bacteroides*, canine, vulvar abscess

Introduction

Subcutaneous abscess is a common skin disorder in small animal medicine and there have been some reports on the disease\(^1,4,7,8\)\(^\)\. However, to the author’s knowledge, there have been no reports on the abscess in the vulvar area in the dog. The present paper reports a dog with vulvar abscess, in which *Bacteroides* sp. was isolated from the lesion.

*Correspondence to: Yoshihiko Sato (SATO Animal Clinic) 2882-5 Ojima, Chikuma, Nagano 387-0013, Japan TEL/FAX 026-272-6003 E-mail: sato-vet612@sky.plala.or.jp

 IMDb: さとう動物病院 長野県千曲市小島
Case Report

A three-year-old, female Miniature Dachshund, weighting 3.9 kg was presented with a swelling on the left vulva. Careful physical examination at the initial presentation revealed a solid mass with approximately 2 cm in diameter in the deep soft tissue surrounding the vaginal wall. The rectal temperature was 38.3°C, and no marked abnormalities in clinical signs and complete blood counts except for vaginal mass in the present dog. The dog was prescribed by 2.5 mg/kg s.i.d. of orbifloxacin (Victas, Dainippon Sumitomo Pharma, Osaka, Japan). However, the lesion was not responded to the treatment and soft swelling with approximately 3 cm in diameter adjacent to the solid mass was recognized at 3 days after initiation of treatment (Fig. 1). Pus-like fluid was aspirated from the soft swelling by fine needle aspiration. Cytological examination of the pus-like fluid using Hemacolor® (Merk Chemicals Japan, Tokyo) revealed a large number of neutrophils and bacterial was observed in the smear specimen stained with (Fig. 2). Abdominal X-ray examination revealed no marked abnormalities except for enlargement of the spleen.

As the initial antibiotic therapy provided no improvement of the skin lesions, surgical excision of the mass was selected. The dog was anesthetized by inhalation of isoflurane, and the soft swelling was incised approximately 1 cm in length by a scalpel. The pus was drained using a syringe, and the cavity of the abscess was washed thoroughly with an antiseptic solution (Isodine for animal use, Meiji Seika Kaisha, Ltd., Tokyo). Complete removal of the pus enables the operator to palpate the solid mass in the deep soft tissue around the vaginal wall. The mass was incised approximately 2 cm in length and the pus was drained from the core of the mass (Fig. 3). The mass was removed surgically using a semiconductor laser surgical unit. The surgical cut was washed carefully with an antiseptic solution, and closed
The amount of 0.3 ml of a mixture of penicillin and streptomycin (Mycilinsol, Meiji Seika Kaisha, Ltd., Tokyo) was injected subcutaneously immediately after the surgery. Oral ampicillin and cloxacillin (Viccillin-S Tablets, Meiji Seika Kaisha, Ltd., Tokyo), 32 mg/kg, bid, was also prescribed for two weeks. The vulvar lesion was completely cured at 10 days after the surgery (Fig. 4).

Bacterial culture of the pus revealed that the anaerobic bacteria were isolated when the specimen was cultured on plates of blood agar and GAM agar. *Bacteroides* sp. was separated by *Bacteroides* bile esculin agar. Antimicrobial susceptibility test revealed that the isolate was sensitive to ampicillin, amoxicillin, clarithromycin, doxycycline, minocycline, chloramphenicol, enrofloxacin and ofloxacin, but resistant to cefazolin. Conversely, no aerobic bacteria were isolated when the pus was cultured on plates of blood agar, heart-infusion agar and BTB agar. The bacterial isolation and antimicrobial susceptibility test were performed at a commercial laboratory (MONOLIS Co., Ltd., Chofu, Tokyo).

The excised mass was fixed in 15% neutralized formalin and its paraffin sections were stained with hematoxylin and eosin (HE) staining. Histopathologically, a large number of neutrophils and macrophages were infiltrated throughout the mass, and a granulomatous tissue with abundant capillaries was formed in the lesion (Figs. 5 and 6). The histopathological findings of the mass lesion were consistent with those of an abscess caused by bacterial infection.

**Fig. 4.** Gross appearance of the left vulva 10 days after the surgery.

**Fig. 5.** Histopathological findings of the mass. Infiltration of neutrophils and macrophages throughout the mass and a peripheral formation of granulation tissue. HE stain. Bar = 400 µm.

**Fig. 6.** Histopathological findings of the mass. Note that neutrophils and macrophages were recognized with abundant capillaries. HE stain. Bar = 100 µm.

**Discussion**

There have been some reports on abscesses in small animals\(^1,4–10\). Farrar *et al.*\(^5\) reported 14 cases of hepatic abscesses in dogs and aerobic bacteria such as *Escherichia coli*, *Klebsiella pneumoniae*, *Staphylococcus epidermidis* and *S. intermedius* were mainly isolated from them. Sergeeff *et al.*\(^10\) reported 14 cases of hepatic abscesses in cat as well and they stated that *E. coli* was the most
commonly cultured organisms. Moreover, Murakami et al.\textsuperscript{9} reported a case of lymph node abscess caused by \textit{Actinomyces viscosus} in a cat.

On the other hand, Cattin \textit{et al.}\textsuperscript{4} reported a case of anaerobic subcutaneous abscess caused by \textit{Clostridium perfringens} infection in a five-month-old dog and Homma \textit{et al.}\textsuperscript{6} reported a case of anaerobic orbital abscess caused by \textit{Prevotella bivia} and \textit{Prevotella buccae} infection in a four-year-old dog. Hoshuyama \textit{et al.}\textsuperscript{7} performed bacteriological examinations in feline subcutaneous abscesses and showed that 28 isolates out of 97 isolates were anaerobic bacteria such as \textit{Fusobacterium}, \textit{Bacteroides} and \textit{Clostridium} spp.

In the present case, an anaerobic vulvar abscess was formed in the deep soft tissue close to the vaginal wall and \textit{Bacteroides} sp. was isolated from the lesion. \textit{Bacteroides} is one of the normal floras in the vagina and large intestines and is the most predominant anaerobic bacteria detected in human urogenital infections such as abscesses of Bartholin’s cyst, vulva and vagina\textsuperscript{5}. Though the isolate in the present case was identified only to genus level, \textit{Bacteroides fragilis} group possess higher pathogenicity in human medicine and it is said that all members of the group induced bacteremia associated with an average mortality of 27 percent\textsuperscript{3}. It is unclear how the abscess formed in the present dog, but speculated whether tiny wound in the vaginal mucosa permitted bacterial invasion through vaginal wall, and formation of an abscess close to the vaginal wall followed by granulomatous changes around the lesion.

Generally, antibiotic medication for abscess is not so effective unless incision and drainage are performed, even though sensitive medicine to the isolate of \textit{Bacteroides} was used as in this report. Therefore, the core abscess formed in the deep soft tissue was dissected and removed by a semiconductor laser surgical unit and these surgical treatments with antibiotic therapy led to excellent clinical improvement in the present case. So far as I know, this is the first report to describe the treatment of a vulvar abscess from which \textit{Bacteroides} sp. was isolated.

This paper was presented at the Academic Conference of the Japanese Society of Small Animal Veterinary Medicine at Takamatsu in Kagawa prefecture, Japan on February, 2008.

References