ABSTRACT

A 6-month old, 7-kg, intact female beagle dog was presented with an enlarged clitoris, licking of the vulva region, drying of the mucosa, and reluctance to sit. An examination found that the clitoris protruded to the vulva cleft and resembled a small penis (os clitoris). Other diagnostic testing, including hematological and serum biochemical profiles were evaluated. The surgical excision of the os clitoris was described.

INTRODUCTION

In female dogs, the clitoris develops from the genital tubercle, as the penis in the male. The enlargement or ossification of clitoris may be caused by an abnormality of chromosome differentiation, by exposure of androgens or progestins during gestation, or by exogenous androgens administration. (Johnson, 2003). At fertilization, the sex chromosomes are established as XX (female) or XY (male).

Key words: os clitoris, hermaphrodite, sexual development disorder
During development of the embryo, ovaries develop if XX, and testicles if XY. An abnormality can occur in chromosome differentiation, such as XXX, XXY, or XO, which is rare in dogs and is not to be inherited (Memon and Mickelsen, 2000).

The disorders of sexual development dogs are usually infertile and may have chronic irritation in the genital area, which may look abnormal to the veterinarians and/or owners. Several conditions can be noticed an abnormality such as a clitoral enlargement resembling a penis with a bone, an abnormally shaped vulva, a caudally displaced prepuce, a penis with hypospadias, or bilaterally cryptorchid during physical examination these affected dogs (Meyers-Wallen, 1986; Meyers-Wallen, 2001). Sexual development disorders have been (uncommonly) seen in the American cocker spaniel, beagle, English cocker spaniel, German short-haired pointer, basset hound, pug, Kerry blue terrier, Afghan hound, and Weimaraner (Meyers-Wallen and Patterson, 1989; Meyers-Wallen, 2000).

The objective of this study was to determine clinical signs, diagnosis findings, and surgical treatment in the dog with clitoral enlargement (os clitoris).

**MATERIALS AND METHODS**

A-6-month old, 7-kg, intact female beagle dog was presented with an enlarged clitoris, licking of the vulva region, and reluctance to sit. Physical examination found that the clitoris protruded to the vulvar cleft and resembled a small penis (os clitoris), drying of the mucosa, and irritation. Other diagnostic testing, including hematological and serum biochemical profiles were evaluated. Surgical excision of the os clitoris was performed at surgical unit, Veterinary Teaching Hospital, Kasetsart University, Bangkhaen campus.

**RESULTS**

The hematology and blood chemistry were normal. The dog was transferred to surgical unit for surgical treatment. The patient was prepared and positioned in dorsal recumbency (Figures 1a,1b,1c). The entire ventral abdomen should be clipped and prepared for aseptic surgery. A urethral catheter was placed to locate the urethral orifice and protect that structure. The os clitoris was lifted off the vestibular floor and removed by simple dissection (Figures 2a, 2b, 2c). The vaginal wall defect was closed with a continuous suture (Figures 3a,3b). The os clitoris was excised. The length of os clitoris about 2 centimeters, resembling a penis with a bone. After the clitoris was removed. Soft tissue surrounding surgical area was swelling and edema. The recovery periods about 7-14 days, surgical wound was healed.
Figures 1 (a, b, c) (1a, 1b) the dog with an enlarged clitoris resembling a penis with a bone (os clitoris) was positioned in dorsal recumbency, (1c) lateral view showed an enlarged clitoris.
Figures 2 (a,b,c) (2a,2b) The os clitoris was lifted off the vestibular floor and removed by simple dissection, (2c) Top view showed the removal of os clitoris

Figures 3 (a,b) The vaginal wall defect was closed with a continuous suture

Figures 4 (a,b) The os clitoris was excised

DISCUSSION

In this study, an excessive licking of the vulva area was seen in the 6-month-beagle-dog which is caused by drying of the mucosa, and clitoral enlargement protruding from the vulvar cleft. The enlarged clitoris was resembled a small penis from the digital examination. To find out the definitive diagnosis of the disorders of sexual development is based upon a thorough investigation of each step in sexual development. Karyotype, gonadal histology, plasma concentrations of gonadotropins and thyroid hormone, and complete description of the internal and external genitalia are necessary for the diagnosis (Memon and Mickelsen, 2000). Due to owner’s decision, the dog did not receive more tests to clarify the cause of this disorder.

Surgical correction was performed in this dog. In general, the removal of os clitoris is not difficult because the urethra is distinct from this defect. Surgical removal of the bone quickly will help to eliminate
the clinical signs (Feldman and Nelson, 1996). Interestingly, clitoral surgery in humans is more complicated than in animals because of cosmetic reason and psychosexual function. There are three main groups of plastic clitoral procedures in human: (i) clitorectomy or clitoral amputation, (ii) clitoral recession, and (iii) clitoral reduction (Creighton, 2002). But, in dogs surgical removal of clitoris tissue (clitorectomy) was curative (Johnson, 2003). A week later, the surgical wound was healed.

In conclusion, surgical removal of the os was the treatment of choice in dog with an enlarged clitoris. Further studies are needed to understand the modes of congeniality and inheritance of most canine sexual development disorders.

ACKNOWLEDGEMENTS

The author thanks to the staff at Veterinary Teaching Hospital, Kasetsart University, Bangkhaen campus and Ms. Aree Thongkum for their encouragement.

REFERENCES


