Pyometra with Inguinal Herniation in a Dachshund Dog

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Introduction
Cystic endometrial hyperplasia-pyometra complex (CEH) is the most frequent and important endometrial disorder in bitches, the exact pathogenesis of which is still unknown (1). CEH is an abnormal response of the bitch's uterus to ovarian hormones (10) and is considered by many authors to be an exaggerated response of the uterus to chronic progestational stimulation during the luteal phase of the estrus cycle, causing an abnormal accumulation of fluid within the endometrial glands and uterine lumen (3). In many cases of CEH secondary bacterial infections occur causing pyometra (1). Sutton et al. (14) reported the occurrence of pyometra when manipulating estradiol benzoate for preventing unwanted pregnancy and Byers et al. (2) advised pyometra in a dog with uterine inguinal herniation which is generated persistent ischemia of uterus causing early fetal resorption. Inguinal hernias are infrequently documented in dogs and the causes of inguinal herniation in small animals are poorly understood. Inguinal hernias are most often seen in middle-age, intact females (6). Omentum is the most common organ present in canine inguinal hernias (13). Uterus often is located in the hernias of affected intact females (6). These hernias often are chronic and do not cause clinical signs until pregnancy or pyometra develops (5). This report is described pyometra with inguinal herniation in a Dachshund dog.

Case history
A 6-year-old, 3.8kg, intact female Dachshund dog was referred with chief complain of right inguinal mass (6x3x3.5cm) and sudden weight loss. According to medical history of this case, the owners indicated that they had observed signs of estrus approximately 7 weeks before presentation, and the dog had been bred during that time period with cohibiting dog. The dog had started to show signs of caudal abdominal mass from 3 weeks age. Owners indicated that they had observed signs of estrus approximately 7 weeks before presentation, and the dog had been bred during that time period with cohibiting dog. The dog had started to show signs of caudal abdominal mass from 3 weeks age. The clinical signs were observed lethargy, anorexia and sudden weight loss. Complete Blood Count (CBC) revealed leukocytosis of 45.1x10⁹/L (range: 6.0-16.9x10⁹/L), Biochemical findings included mild elevated ALKP (341U/L; range: 23-212U/L), BUN and Creatinin were normal range. Radiographic studies of the abdominal cavities revealed soft tissue opacity within in caudal abdominal cavity extending into the inguinal region and revealed a large soft tissue opacity on the pelvic midline (Fig. 1A). Ultrasonographic studies of the right inguinal region revealed fluid filled tubular uterus. Uterine lumen was observed anechoic fluid, echogenic particle and hyperechoic structure (Fig. 1B). Based upon history, physical examination and diagnostic test results, it was presumptively diagnosed of closed pyometra with inguinal herniation of the right uterine horn. The patient was placed in dorsal recumbency, and the ventral abdomen was aseptically prepared in a standard fashion. A standard ventral midline incision was made. Right lateral subcutaneous dissection revealed an inguinal hernial sac with entrapped omentum and right uterine horn (Fig. 2A). Ventral midline celiotomy was operated, and a fluid distended right uterus in inguinal hernial migration was visualized. The uterine body, bilateral uterine horn and ovary were removed. The omentum was returned into the peritoneal cavity. Herniorrhaphy was performed in a vertical mattress pattern. Through the macroscopic observation of the removed uterus, within the lumen of the right uterine horn was identified dark-brown uterine exudate, partially necrotic abortive conceptus (Fig. 2B). Necrotic abortive conceptus was observed hyper-echoic structure in right uterine horn via previous ultrasonographic examination. Bacterial culture was performed in ovariohysterectomized uterine lumen, and revealed into E. coli. The patient was re-evaluated 1-2 weeks after clinical signs had resolved. Physical examination findings were within normal ranges and the patient were recovered in contentment.

Discussion
CEH is an acute or chronic post-estrual disease of adult intact bitches leading to inflammatory exudate in the uterus that is associated with variable clinical and pathologic signs (8). Bacterial infection with opportunistic organisms from the vagina occurs secondary to CEH. Secondary infection with opportunistic bacteria is occurred when organisms that move into the uterus during proestrus and estrus cannot be cleared prior to the luteal phase (9). The most common organism cultured from the uteri of female dogs with CEH is E. coli, with mean reported prevalence of 70.3% (7, 15). Byers et al. (2) reported histopathologic changes suggestive of both
pregnancy and pyometra. A finding of a partially necrotic placenta supports a hypothesis of initial pregnancy and subsequent early fetal resorption. Early fetal resorption has been associated with cystic endometrial hyperplasia, hypoluteiodism, hypothyroidism, chromosomal abnormalities and infectious diseases such as brucellosis (4, 12). This patient also had history and macroscopic observation changes suggestive of both pregnancy and pyometra. Given the history of suspected breeding 5-6 weeks before presentation, a finding of a partially necrotic abortive conceptus supported of initial pregnancy and subsequent early fetal resorption. Ultrasonographic examination demonstrated fluid filling tubular uterus. The fluid within the uterus was anechoic, with evidence of abortive conceptus considered hyperechoic structure. The partially necrotic placenta may have provided a suitable environment for bacterial infection that resulted in pyometra (2). E. coli was cultured from this patient uterine horns. Miyakoshi et al. (11) reported uterine ischemia during gestation in rats promoted uterine and placental leukocyte infiltration, as well as induced intrauterine fetal growth retardation. Also, Byers et al. (2) had suggested the possibility of progressive uterine ischemia altering the intrauterine cellular milieu contributed to early fetal resorption and development of pyometra. This case is recognized progressive uterine ischemia from inguinal hernia after pregnancy contributed to early fetal resorption and developmented pyometra. Obesity increase intra-abdominal pressure, thus forcing peritoneal adipose tissue into the inguinal canals. The vaginal process and inguinal canal may be dilated secondary to accumulation of fat surrounding the round ligament, thus predisposing a dog to potential herniation (6). This patient was noted to have clinical signs of estrus approximately 7 weeks before presentation and the inguinal mass was observed to increase substantially in size during the 3 weeks before presentation. The patient was obese with a body condition score of 4/5 as usual before generated hernia. Therefore, this case is the CHE by progressive uterine ischemia from inguinal hernia after pregnancy.

References

Fig. 1 Lateral abdominal radiograph (A) an ultrasound image (B) depicting inguinal herniation.

A) Lateral abdominal radiograph with tubular soft tissue opacity within the caudal abdominal cavity extending into the inguinal subcutaneous tissues.
B) Ultrasound image of the hernial sac. Anechoic fluid, echogenic particle and hyperechoic structure contained with the uterine lumen.

Fig. 2 View of incised hernia sac and necrotic abortive conceptus.
A) Incised right inguinal hernial sac with entrapped omentum and right uterine horn.
B) Dark-brown uterine exudates and partially necrotic abortive conceptus.