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A Case of Chronic Superficial Keratitis in a German Shepherd Dog

Yakup KOCAMAN[1a]✉

1. Atatürk University, Faculty of Veterinary Medicine, Depertment of Surgery, Erzurum, TURKEY.ORCID: 0000-0002-3580-7782[a]

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Kocaman Y: A Case of Chronic Superficial Keratitis in a German Shepherd Dog, Atatürk University J. Vet. Sci., 1(1): 1-5, 2023.

Abstract: Chronic superficial keratitis, known as Paunnus and Uberreitter's syndrome, is a progressive autoimmune eye disease, especially in German shepherd dogs, Belgian shepherd dogs and greyhound breed dogs. Although the cause of the disease is not exactly known, age, racial predisposition, ultraviolet radiation, high altitude and other eye diseases trigger the formation of pannus. Ocular defects in affected animals are non-infectious and respond to treatment based on topical steroids and immunosuppressive drugs. There is no complete cure for the disease. The aim of the treatment is to significantly improve the quality of life of patients by achieving a significant reduction in symptoms. A patient with bilateral conjunctivitis in the eye and vascularization, pigmentation, epithelial perforation in the cornea in a seven-year-old male German shepherd dog was brought to our hospital for treatment. The treatment was continued regularly for five weeks and a significant decrease in corneal symptoms was observed.

Keywords: Autoimmune, Keratitis, Pannus, Pigmentatio

INTRODUCTION

Chronic superficial keratitis (CSK), also called Pannus or Uberreiter's syndrome, is a progressive chronic autoimmune eye disease in dogs that affects the epithelial and stromal layer of the cornea. The word pannus means both that the normal tissue on the cornea is replaced by granulation tissue and that the tissue located in the eye is characterized by cell infiltration and extensive vascularization (1). The etiology of this disease is unknown, and the prognosis is determined by how deep the cells of the immune system go into these layers of the cornea (2, 3). It is thought that in addition to increasing the risk of CSK with age, it may also increase with the patient's exposure to environmental factors such as exposure to smoke, ultraviolet light, high altitude (4). An eye disease caused by external factors can also cause stimulation of the autoimmune system and trigger the formation of the disease (5).

At an early stage, an increase in epithelial cells and severe plasma cell, lymphocyte, macrophage and melanocyte infiltration are observed in the stroma layer of the cornea. A condition characterized by neovascularization is observed especially in the corneal limbus. Vascularization and cell infiltration in the corneal stroma cause the formation of fibrovascular tissue. Initially, this pink-colored tissue thickens over time as the disease progresses, melanocytes, histiocytes and fibrocytes enter the cornea, corneal edema and vascularization occur. In the developing stages, the vascularization and stromal layer in the corneal epithelium are deeper, and the region has a more pigmented appearance (1). In genetic studies where the genetic map of healthy dogs and dogs with chronic superficial keratitis is compared, it is recommended not to produce breeds that carry these genes dominantly (6). Ocular defects in affected animals are non-infectious and respond to topical steroid-based treatment. That is why CSK is considered an autoimmune disease(7). These autoimmune hypotheses are supported by reports of major histocompatability complex in german shepherd dogs (8).

The aim of the treatment is to control the disease as much as possible to prevent the animals from going blind (3). CSK is incurable. The therapeutic goal is to control the disease and to ensure the regression of lesions in order to prevent blindness from occurring at some times (9).

CASE PRESENTATION

A seven-year-old male german shepherd dog brought to the Surgery Department of Atatürk University Veterinary Faculty Animal Hospital had conjunctivitis that had been going on for about 1 year, as well as pigmentation, vascularization, epithelial perforation in the cornea. Previously, attempts had been made to treat it with topical antibiotics and steroid applications, and the symptoms in the patient had decreased. But he was admitted to our hospital due to a recurrence of the disease. The patient underwent an eye examination after a general examination. Oculus sinister and oculus dexter had increased opacity on the central corneal surface, increased vascularization, pigmentation and fibrous tissue, and conjunctivitis chronica was found in the bulbar and palpebral conjunctiva. Fluorescein staining, Schirmer test 1 and tonometric examination were performed on the patient. Intraocular pressure (IOP) was measured using rebound tonometer(Tonovet, Icare, Vantaa, Finland) for tonometric examination. Then the Schirmer test 1 (Akschirmer, Turkey) was performed and dry eye was evaluated. Then Fluorescein staining was performed and the central corneal surface was evaluated positively in both eyes. When the breed predisposition, age, duration of the disease, previous treatments and altitude characteristics of the animal's location were evaluated, the animal was diagnosed with Uberreitter's syndrome. In the treatment, moxifloxacin was used as antibiotic drops in both eyes, two drops four times a day. Since it is an autoimmune disease, cyclosporine A was used one drop twice a day in both eyes for immunosuppressive therapy. After the perforation in the corneal epithelium healed at the end of the first week, dexamethasone was added to the treatment prescription and recommended to be used in both eyes, one drop four times a day. Fluorescein application, Schirmer test 1 and tonometric examination were performed routinely every week. After fluorescein application was applied in the first week, dye retention was observed on the central corneal region and was evaluated as positive (Figure 1, Figure 2).

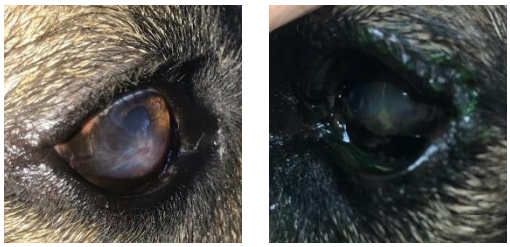

Figure 1. Pigmentation, corneal edema and perforation of the corneal epithelium found in the eye in the first week.

Figure 2. Involvement of the corneal surface as a result of pannus and fluorescein staining in the eye in the first week.

No steroid drops were added to the prescription for the first week. When fluorescein application was performed on the second week, there was no stain and it was evaluated as negative. Steroid use was started. The fluorescein application result was evaluated as negative in the last 3 weeks of follow-up (Figure 3, Figure 4).

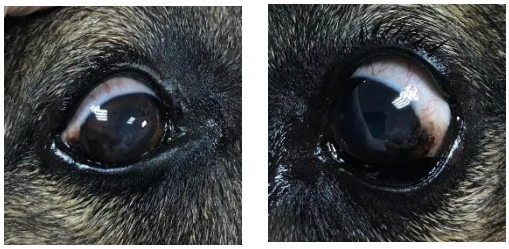

Figure 3. By the end of the fifth week, pigmentation was limited in the temporal region of the cornea, and corneal edema completely disappeared. Conjunctivitis has decreased significantly.

Figure 4. At the end of the fifth week, the perforation in the corneal epithelium completely disappeared and pigmentation was limited. Pigmentation has not completely disappeared.

The results of the Schirmer test 1 were measured as 20 mm, 18 mm, 17 mm, 24 mm, 25 mm for the right eye and 21 mm, 19 mm, 16 mm, 21 mm, 23 mm for the left eye respectively. During the treatment period, the amount of tears decreased for the first three weeks and increased above the first measurement for the next two weeks. The tonometric examination results were measured as 16 mm/Hg, 15 mm/Hg, 13 mm/Hg, 10 mm/Hg, 10 mm/Hg for the right eye and 17 mm/Hg, 15 mm/Hg, 14 mm/Hg, 12 mm/Hg, 11 mm/Hg for the left eye respectively. Intraocular pressure decreased during the treatment period.

DISCUSSION and CONCLUSION

It is believed that medical treatment should be tried in the treatment of CSK at the first stage (10). Corticosteroids and cyclosporins are the center of CSK treatment. Studies have shown that regular steroid use in the disease reduces corneal neovascularization, cellular infiltration and pannus. (11). Neovascularization is the most prominent symptom on the cornea among the symptoms of CSK. Therefore, the decrease in corneal neovascularization indicates that the prognosis is progressing in a good direction (12). In this case, the onset of neovascularization, which was observed especially in the first stage, decreased significantly during the five-week follow-up period. Topical cyclosporine applications prevent pigment formation but cause irritation of the conjunctival tissue (13). In this case report, it was observed that regular use of corticosteroids provided a significant amount of regression of the formed pannus. Steroid use was continued according to the condition of the lesion. Cyclosporins are powerful immunosuppressive agents for eye diseases. Many carrier forms, especially implant forms, have been developed to strengthen the local effects and provide longer durability. Implant forms are much more effective than topical forms, but may cause complications due to their high molecular weight (14, 15).We cant use these implant form in this case. Although we have not seen any complications associated with the use of cyclosporine, it is believed that it causes the progression of pannus in the eyes of dogs in research conducted for newly emerging carrier forms (16).

IOP was high during the acute period of the disease, while it gradually decreased during the follow-up period. But in order to obtain a meaningful result, more extensive work needs to be done. In previous studies, they have noted that during acute conjunctivitis, conjunctival mucin cells are damaged, and therefore dry eyes can be observed for up to 30 days, even if conjunctivitis heals (17). In the study, while the amount of tears decreased until the third week, it was observed that it increased due to the use of medication. It was thought that the reason why the amount of tears increased after the third week was due to recovery.

Pigmentation is found not only on the surface of the cornea. it is also found on the conjunctival surfaces of the eye. (18). In this case, pigmentation was observed on the corneal surface and bulbar conjunctiva, but not on the third eyelid.

CSK is an autoimmune disease and its etiology is not fully known. Many factors have been defined in its pathology, mainly breed predisposition. The commonly seen breeds are the German Shepherd dog, the Belgian shepherd dog and the Greyhound. But it is still unknown why it is so common in these breeds, and extensive research is required (19). In addition, environmental factors such as ultraviolet light are thought to cause CSK in the eye. For this purpose, lenses with UV filters have been produced to protect dogs from UV light. (20). In this case, anamnesis was taken from the animal owners that there was redness in the eyes accompanied by mucous discharge and that training was performed during intense times of the sun. With the regular use

of medications, pannus disease has significantly regressed, and the lesion has remained limited in the temporal region.

As a result, it was observed that regular use of two basic immunosuppressive agents in dogs with CSK significantly reduces pigmentation and significantly improves quality of life. While blindness does not occur in dogs that receive regular treatment, they continue to live their lives in a more comfortable way.

CONFLICT of INTEREST

The authors declare no conflict of interest.

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Evaluation of Frenulum in A Bull

Ali Doğan ÖMÜR[1a], Yakup KOCAMAN[2], Serkan Ali AKARSU[1b]✉

1. Atatürk University, Faculty of Veterinary Medicine, Department of Reproduction and Artificial Insemination, Erzurum, Turkey, +90 532 599 56 86, alidogan@atauni.edu.tr, https://orcid.org/0000-0002-2976-4368[a]
2. Atatürk University, Faculty of Veterinary Medicine, Department of Surgery, Erzurum, Turkey, +90 542 341 04 42, yakup.kocaman767@gmail.com, https://orcid.org/0000-0002-3580-7782
1. Atatürk University, Faculty of Veterinary Medicine, Department of Reproduction and Artificial Insemination, Erzurum, Turkey, +90 553 648 24 58, serkan.akarsu@atauni.edu.tr, https://orcid.org/ 0000- 0003-4450-6540[b]

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Abstract: Penile frenulum can be defined as the fusion between the epithelial surface of the penis and the preputium seen in animals and humans. In this study, the clinical diagnosis and operative treatment of penile frenulum encountered in a male Brown Swiss cattle were shared. A 2-year-old Brown Swiss cattle brought to Atatürk University, Faculty of Veterinary Medicine, Department of Surgery was examined. The animal was preoperatively prepared and kept for the operation for 12 hours. The animal was sedated with a combination of xylazine (0.05 mg/kg) and ketamine (1 mg/kg), and the penis was removed from the prepuce. Penile tissue and preputium junctions were dissected under local anesthesia. Both preputium and penis were ligated separately. Bleeding was controlled and the bull was raised. The bull was followed for 5 days postoperatively and antibiotic treatment was given. As a result, the operative treatment of the penile frenulum was successful and the bull was able to maintain a fertile life.

Keywords: Bull, Frenulum, Infertility, Penis, Surgery

INTRODUCTION

The frenulum is among the most common anomalies that interfere with the reproductive health of the penis, foreskin or sheath of young bulls (1). The epithelial surfaces of the penis and preputium are fused in newborn calves. When the calf is 4 months old, the penis and prepitium egin to open with the effect of testosterone and are completed between 9 and 11 months (2). The skin fold connecting the preputium on the ventral surface of the glans penis is called the frenulum of the penis. This situation pulls the cranial part of the penis down during mating and prevents it from being directed to the vagina, causing difficulty in mating (3). In a study by Carroll et al. (4) it was reported that the highest incidence of frenulum was found in Beef Shorthorn and Aberdeen Angus cattle on 10,940 bulls, the success of operative treatment was high and the prognosis was good. The frequency of frenulum is reported to vary between 3.64 and 5.2/1000 bulls in other studies (5, 6). In one study, it is stated that the rate of the permanent penile frenulum is 0.5% (7).

CASE PRESENTATION

A two year old Brown Swiss breed bull, brought to Atatürk University, Faculty of Veterinary Medicine, Department of Surgery, was examined and a frenulum was diagnosed.

Figure 1. Penis Frenulum in a bull

Xylazine (0.05mg/kg) was used intramuscularly as premedication. Ketamine hydrochloride (1 mg/kg) was used intravenously as a solid anesthetic for induction. After induction, the animal was restrained and laid in the lateral position. Preputium and surrounding tissues were prepared with razor. (No. 10 (1.5 mm, Heineger, Saphir, Switzerland). Chlorhexidine and povidone iodine were used for penile tissue and foreskin antisepsis. Local anesthesia with 2% infiltration of lidocaine was applied to the prepuce and penile attachment points. Decapitation was performed by performing a dissection between ligations after the large vessels were ligated bilaterally by holding the penis with gauze. Penicillin procaine (10000 IU/kg) and dihydrostreptomycin sulfate (10 mg/kg) were administered intramuscularly for 5 days postoperatively.

DISCUSSION and CONCLUSION

In this case report, it was aimed to provide information about the diagnosis and treatment of penile frenulum encountered in a bull. In previous studies, information was given about the diagnosis and treatment of penile frenulum in bulls (8). In the study, it was stated that after the penile frenulum operation, the bull can start mating activity in 14-21 days. According to our findings, normalization was observed in the bull after the 5th day. However, the fertility rate was not determined because the desire for mating and fertilization were affected by many factors such as the completion of the spermatogenesis cycle. It is stated that the thin connective tissue that does not break in the penile frenulum does not prevent penile elongation, but may prevent intromission (9). In our findings, the penis has the capacity to lengthen. However, the thin connective tissue that did not rupture was pulling the penis ventrally. In this case, it is thought that the bull will be forced to mate. In the frenulum of the penis, the tissues can be easily separated, but bleeding is common (10). In addition some studies have reported that the frenulum may be hereditary and these animals should not be used as commercial or breeding stock (11). Nonetheless, this situation is neglected in determining the fertility rate of the bull (12). In the semen collection process, it will be useful to examine the animal in terms of frenulum (13). In this respect, it was concluded that animals with penile frenulum should be treated operatively, but these animals should not be used in herds.

CONFLICT of INTEREST

There is no conflict of interest between the authors.

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Surgical Treatment of a Thirteen-Year-Old Budgerigar (Melopsittacus Undulatus) with Brown Hypertrophy the Cere

Ömer Tarık ORHUN[1a], Yakup KOCAMAN[1b]✉

1. Atatürk University, Faculty of Veterinary Medicine, Department of Surgery, Erzurum, Turkey, +905367373262, orhun.mertarik@gmail.com, https://orcid.org/0000-0003-4184-8879[a]
1. Atatürk University, Faculty of Veterinary Medicine, Department of Surgery, Erzurum, Turkey, +905423410442, yakup.kocaman@atauni.edu.tr, https://orcid.org/0000-0002-3580-7782

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Abstract: The avian species commonly referred to as budgerigars possess a smooth and glossy structure surrounding their nasal apertures, which contains a soft tissue known as cere. It functions as a pivotal determinant in the identification of gender. Endocrine dysfunction, age-related endocrinopathy, and hypovitaminosis are potential factors that may contribute to hormonal imbalances. It is possible for budgerigars to form a conclusion. Open-mouth breathing and respiratory discomfort are observable clinical symptoms. Surgical intervention is the recommended course of action for the treatment of such instances. A 13-year-old male budgerigar presented with nasal swelling and discoloration symptoms and was referred to the Department of Surgery at the Veterinary Faculty of Ataturk University. The physical assessment revealed an enlarged cere that exceeded the typical size, respiratory distress, and discoloration characterized by a dark brown hue. After conducting a comprehensive clinical evaluation, it was concluded that surgical intervention would be the most optimal therapeutic approach. Complete recovery was observed in the postoperative period without any complications. The patient's breathing improved.

Keywords: Avian, Hypertrophic cere, Respiratory distress, Surgical intervention

INTRODUCTION

The cere, a soft and fleshy exposed area, is present on the upper side of the rhinotheca in numerous avian species. The cere of numerous raptors, including but not limited to pigeons, doves, parrots, and other avian predators, exhibit a high degree of development. The nasal apertures are an integral component of the cerebrum (1).

The spherical apertures located in the cere of the budgerigar (Melopsittacus undulatus) are commonly referred to as nares. The utilization of cere coloration in parakeets, whereby males exhibit blue cere while females exhibit white cere, serves as a dependable means of gender identification. (2). A conspicuous, sleek protuberance reminiscent of wax is present in their cere. The colors of the object in question possess connotations related to sexuality. During the breeding stage of the female, the cere undergoes a process of thickening and crusting. Furthermore, the presence of endocrinopathy related to aging may exacerbate the issue (3) and it is referred to as "brown hypertrophy". Determining the sex of individuals with mixed-color morphs can pose a challenge due to the potential for cere color to appear slightly pink, even in males. (4). The collection of debris surrounding the cere may be caused by poor husbandry, which includes dusty substrates, a lack of grooming, and accumulations from discharges (5).

Brown cere hypertrophy primarily affects senior female budgerigars. Hormonal imbalance is commonly identified as the underlying cause. The thickening of the brown cere in budgerigars, known as cere hypertrophy, may serve as an indicator of an oestrogenic condition. The manifestation of this condition in budgerigars may also be attributed to endocrine or neoplastic pathologies, as well as “vitamin A” deficiencies. Consequently, notable

hyperplasia arises within the cornified layer of the cere. There is a possibility that it could potentially evolve into a protuberance resembling a horn. The morphology of the cere bears resemblance to that of keratinous structures such as nails or the horn of a rhinoceros. Surgical intervention is deemed unnecessary unless it poses an obstruction to the nasal canal. In instances of open-mouth breathing, it is recommended that the excess tissue be excised through surgical means (4,6).

The current study aimed to evaluate the surgical treatment of brown hypertrophy of the cere in a 13-year-old male budgerigar.

CASE PRESENTATION

A 13-year-old male budgerigar was presented to the Surgery Clinic of Atatürk University Animal Hospital with a reported issue of cere enlargement and discoloration, as depicted in Figure 1.

Figure 1. View of the hypertrophic cere

Over the course of four months, the cere of the bird underwent a gradual transformation in its physical appearance. The physical examination indicated significant enlargement of the cere beyond the standard range, accompanied by dark brown discoloration and respiratory distress. Following a comprehensive clinical assessment, surgical intervention was determined to be the optimal course of treatment. The budgerigar was restrained physically, and anesthesia was produced using 5% Isoflurane (Forane, Abbott, USA) in oxygen (2 L/min flow rate) administered by face mask, placed in dorsal recumbency, and the surgical field was aseptically prepared with % 0,012 chlorhexidine gluconate (Hibitanol, Kimpa, Turkey). Tissue maceration was achieved with eye pomade which included terramycin (Terramycin, 5 mg\10000IU, Pfizer, Turkey) before surgery. The surgical procedure selected involved the removal of hypertrophic cerebral tissue. A surgical procedure involved creating a linear cut at the base of the cere while taking precautions to prevent harm to the underlying structures. Blunt dissection was executed to isolate the hypertrophic tissue from the adjacent healthy tissue. Electrocautery was employed as needed to manage to bleed and achieve hemostasis. The excision of the hypertrophic tissue was performed with care, ensuring the preservation of the structural integrity of the adjacent nasal passages and surrounding anatomical features to achieve a thorough removal, as depicted in Figure 2.

Figure 2. Appearance of the cere after surgical removal of hypertrophic tissue

During the postoperative phase, a regimen of orally administered vitamins and antibiotics (specifically, Vitaform from Vetas in Turkey) was implemented for a duration of 5 days.

DISCUSSION and CONCLUSION

Brown hypertrophy of the cere is a non-neoplastic ailment that manifests in budgerigars and other avian species due to various causes. Surgery is typically not advised unless there is a coexisting pathology or notable impairment of vital functions. Budgerigars may develop rhinitis due to cere

hypertrophy and nasal congestion (7). A previous study has investigated the treatment of Brown hypertrophic with the cere, a condition characterized by nasal blockage, through the application of a modest quantity of mineral oil or ophthalmic ointment to soften the affected area, followed by a delicate scraping procedure to eliminate the obstruction. (8). In this case, maceration was performed using eye pomade with terramycin active ingredient (Terramycin 5mg/10000 IU, Pfizer, Turkey), and tissue removal was performed.

Although brown hypertrophic cere is typically observed in adult female avian specimens, it may also manifest in male budgerigars concomitant with gonadal neoplasms (8). The present case was observed in a male budgerigar, wherein no neoplastic growth was detected in any other tissue. Typically, the management of brown hypertrophic cere does not necessitate intervention. However, in situations where breathing is impeded due to the closure of the nostrils, either partially or completely, it becomes necessary to perform a partial or complete removal (9). In this case, a complete bilateral nostril removal procedure was carried out due to their complete closure.

In conclusion, when confronted with cases of brown hypertrophic cere, a radical approach involving surgical intervention becomes necessary if there is complete obstruction of the nasal passages. In the event that the nostrils have not been fully obstructed, intervention may not be necessary.

CONFLICT of INTEREST

There is no conflict of interest between the authors.

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A Case Of Dystocia in A Queen Related To Uterus Rupture

Ayşe ÇİNPOLAT[1a]✉, Şifanur AYDIN[1b], Alper Yasin ÇİPLAK[1c]

1. Hatay Mustafa Kemal University, Veterinary Faculty, Department of Obstetrics and Gynecology, Hatay, Türkiye, +905437807816, aysecinpolat97@gmail.com, https://orcid.org/0009-0008-8254-1682[a]
1. Atatürk University, Veterinary Faculty, Department of Obstetrics and Gynecology, Erzurum, Türkiye, +905419267712, sifaaydn.1080@gmail.com, https://orcid.org/0000-0002-8332-0514[b]
1. Atatürk University, Veterinary Faculty, Department of Obstetrics and Gynecology, Erzurum, Türkiye, +905396719646, alperciplak@atauni.edu.tr, https://orcid.org/0000-0002-7912-7703[c]

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Abstract: The case material consists of a British Shorthair cat, which was brought to Erzurum Atatürk University Veterinary Faculty Animal Hospital, at the age of 15 months and on the 65'th day of pregnancy. Uterine rupture is a phenomenon characterized by disruption of the integrity of the muscular layer of the uterus, which can cause maternal morbidity-mortality and perinatal deaths. Despite all the possibilities of modern medicine, uterine ruptures are one of the biggest causes of maternal and fetal mortality and morbidity. The diagnosis of the case is made by clinical and ultrasonographic examination findings. Although uterine rupture is a rarer case in cats than dogs, seen as a secondary complication of exogenous oxytocin/prostaglandin administration or difficult delivery, it can also occur due to cesarean section scar, uterine tumor, or trauma. In conclusion, a careful clinical examination and correct treatment method should be chosen in cases characterized by abdominal pain in cats.

Keywords: Cat, Dystocia, Uterine rupture

INTRODUCTION

Uterine rupture is a phenomenon characterized by disruption of the integrity of the muscular layer of the uterus, which can cause maternal morbidity-mortality and perinatal deaths. Despite all the possibilities of modern medicine, uterine ruptures are one of the biggest causes of maternal and fetal mortality and morbidity. The diagnosis of the case is made by clinical and ultrasonographic examination findings. Although uterine rupture is a rarer case in cats than dogs, seen as a secondary complication of exogenous oxytocin/prostaglandin administration or difficult delivery, it can also be formed due to cesarean section scar, uterine tumor or trauma (1).

CASE PRESENTATION

The case material consists of a British Shorthair cat, which was brought to Erzurum Atatürk University Veterinary Faculty Animal Hospital, at the age of 15 months and on the 65th day of pregnancy. In the anamnesis taken from the patient's owner, it was learned that the labor pains started approximately 24 hours ago, and the brood juices were seen, a live fetus was born at the same time and died later, and it vomited twice a day. On clinical examination, fatigue, dehydration, abdominal pain and lying in the lateral position were observed in the cat. In the light of this information, fetal heartbeats of the fetuses were checked with Pulsed-Wave (PW) Doppler mode in ultrasonographic examination, and the viability of the fetuses was determined. Ultrasonographic examination revealed that the mean heart rate of the fetuses was 180 bpm. Since the number of fetuses cannot be determined precisely by ultrasonographic examination, the number of live fetuses cannot be expressed clearly. According to the findings of anamnesis and clinical examinations,, this case was diagnosed as a dystocia due to uterine inertia (secondary inertia). Medical treatment was applied primarly, as a dystocia was diagnosed because of uterine inertia. The treatment was started as an intravenous (IV) infusion of 100 milliliter (mL) of 0.9% Isotonic Sodium Chloride (POLİFLEKS, POLİFARMA, Türkiye) containing 0.5 mL of Oxytocin (Vetaş, Oksitosin, Türkiye). After the

oxytocin, abdominal contractions started, and the respiratory rate increased in the cat. The cat began to strain in the hunchbacked position and defecate hard, due to the pain caused by abdominal contractions. It was observed that blood came from the vulva of the cat with defecation. Because of the bloody discharge from the vulva in the form of leakage, the cat was quickly taken to cesarean section. Preoperative hematological test and biochemical analysis were not performed because the cat was operated on urgently. Considering the food consumption of the cat before the operation, Cerenia (Zoetis, Cerenia, USA) [1 mg/kg Subcutan (SC)] was injected to minimize the risk of aspiration pneumonia. After the antiemetic administration, the cat was placed under general anesthesia with the combination of Butorphanol (Richter pharma, Butomidor, Austria) (0,5 mg/kg SC)-Medetomidine (Orion pharma, Domitor, Finland) [(60 µg/kg Intramuscular (IM)]-Ketamine (Vetagro, Vetaketam, Poland) (10 mg/kg IM). The left flank region was selected for the incision line. During the operation, there were ruptures in the uterus after the muscle layers and peritoneal incision, and 5 fetuses were located in the abdominal cavity.

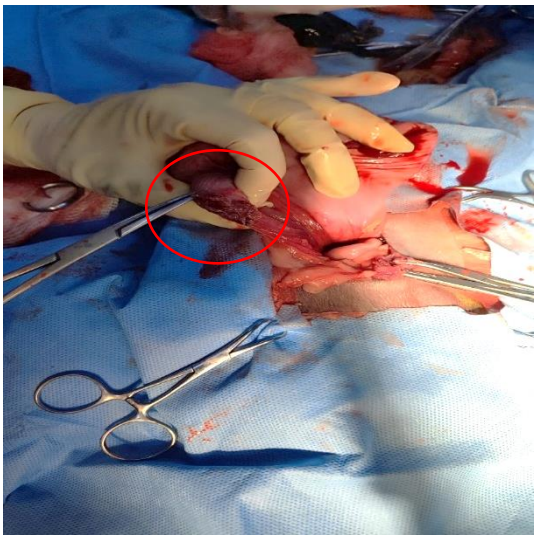

Figure 1. Red Circle: Rupture in Right Uterine Horn

It was observed that there was no vitality, and color changes began in the fetal membranes and fetal fluid due to meconium. The cause of these ruptures in the uterus may be exogenous injection of oxytocin. However, considering this possibility, low-dose oxytocin injection was performed.

Figure 2. Dead Fetuses

After the dead fetuses were removed from the abdomen, the operation was completed by performing an ovariohysterectomy due to ruptures in the uterus, and the abdominal region was sutured after irrigated with 0.9% Isotonic Sodium Chloride. After the operation, Equizolin (Tüm Ekip İlaç A.Ş., Eqizolin, Türkiye) (20 mg/kg IV) was administered for the first 3 days and Synulox (Zoetis, Synulox, Türkiye) (8,75 mg/kg SC) was administered for 7 days to prevent the infective tissues of dead fetuses from creating any toxemia in the queen. During this period, fluid therapy and, when necessary, Non-steroidal Anti-inflammatory (baVET, Bavet Meloxicam, Türkiye) (0,1 mg/kg SC) injections were administered. It was reported that the general condition of the cat improved after the medical treatment and there was no problem in eating and drinking.

DISCUSSION and CONCLUSION

Uterine rupture is an extremely rare phenomenon in cats. (2). In the etiology of uterine rupture, there are reasons that developed during pregnancy or existed before pregnancy. Pre-pregnancy causes include pyometra or stump pyometra (3). Some researchers reported that a cat with stump pyometra had ruptured uterus and died

two days later despite surgical intervention and abdominal irrigation (4). The most common cause of uterine rupture in cats is trauma during pregnancy. Sometimes with the rupture of the uterus, the contents of the uterus and the fetus/fetuses are displaced into the abdominal cavity and implanted in any organ in the abdominal cavity, sometimes fetal deaths occur because of trauma and uterine rupture. It is stated that in cases that were shaped in the early stages of pregnancy and were not intervened, the fetus(s) implanted in any organ in the abdominal cavity may cause ectopic pregnancy and cause dysfunction in the relevant organs (5). In the case reported by Dharmaceelan et al., it was reported that the fetal extremities protruded from the trauma area when a pregnant cat was bitten by another cat. It has been reported that the fetuses on the bitten side were dead and the fetuses on the other side were alive in a pregnant cat who underwent cesarean section. (6).

Prenatal uterine ruptures were associated with traffic accidents, while perinatal uterine ruptures were associated with infection, dead fetus, uterine torsion, inappropriate obstetric technique, and indiscriminate use of oxytocin (7) (8). While motor vehicle trauma was present in two of the three cases presented by Rebecca et al. (9), uterine rupture was encountered because of being bitten in one. It was reported that two domestic cats recovered uneventfully after laparotomy and ovariohysterectomy, while the other cat died while being taken to the animal hospital. As a result of necropsy, uterine rupture and associated peritonitis were reported.

Lucas et al. (10) reported that an 18-month pregnant British Shorthair cat was brought for examination because of a traffic accident. Abdominal and thorax radiographs revealed rupture of the diaphragm and three fetuses in the abdominal cavity. The general condition of the cat with uterine rupture is good, body temperature is 39 °C and mucous membranes are normal; reported that the abdomen was tense on palpation, and they detected a non-painful mass in this region. They stated that there was no discharge, and no fetus was found in the vaginoscopic examination. A single fetus, which was found freely to the right of the abdominal cavity by laparotomy, was removed as lifeless. In the case presented by Alper et al., (11) it was reported that a 5-year-old pregnant cat with mixed breed was brought to the animal hospital because of a traffic accident. In the examination, a foul-smelling discharge from the vagina, cold mucous membranes and weakened eye reflex were detected. Uterine rupture was detected in the cat who underwent cesarean section. Two dead fetuses were removed from the abdominal cavity by laparotomy. In the case presented by Webb et al., (12) it was reported that a 10-month-old pregnant cat was brought with a case of difficult delivery. On general examination, body temperature was 37,1°C, pulse rate was 120, respiratory rate was 30, bloody vaginal discharge and swelling in the left hind extremity were reported. It was determined that the skin on the side of the swelling was peeling and bruised. Five fetuses were removed lifeless from the abdominal cavity by laparotomy.

As a result, it should not be forgotten that there may be ruptures in the uterus and even the kittens may be found in the abdominal cavity in cats brought with the complaint of dystocia, and the treatment method to be applied should be carefully selected.

CONFLICT of INTEREST

There is no conflict of interest between the authors.

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JOURNAL OF VETERINARY CASE REPORTS

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Radiological and Thermographic Diagnosis of Myositis Ossificans in A Shepherd Hybrid Dog

Ayşe Başak KAPÇAK[1a]✉, Elif DOĞAN[1b]

1. Kastamonu Üniversitesi, Veteriner Fakültesi, Cerrahi Anabilim Dalı, Kastamonu, Türkiye.
basakkapcak@kastamonu.edu.tr, ORCID ID: 0000-0002-5796-5298[a]
1. Kastamonu Üniversitesi, Veteriner Fakültesi, Cerrahi Anabilim Dalı, Kastamonu, Türkiye.
elifdogan@kastamonu.edu.tr, ORCID ID: 0000-0002-3321-8116[b]

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Abstract: In this case report, the thermographic and radiological diagnosis of myositis ossificans circumscripta case in a 13-year-old male Shepherd cross dog is described. The animal was brought to our clinic with the complaint of chronic lameness after a traffic accident. On physical examination, a prominent swelling was observed in the left anterior extremity. The patient had no signs of paralysis. On palpation, the swellings were found to be harder as it progressed from the distal parts of the left anterior extremity to the proximal part. A firm, well-defined swelling the size of a tennis ball was also noted on the medial part of the humerus. It was decided to perform thermographic imaging as a clinical auxiliary pre-diagnosis tool. After the measurements, temperature differences were detected between the two front legs, especially in the proximal 2/3 parts of the humerus. Radiological evaluation was deemed appropriate for definitive diagnosis. After examination, the swelling was defined as a case of myositis ossificans circumscripta originating from the proximal 2/3 of the humerus. For the treatment of the case, methylprednisolone treatment and regular follow-up of the patient were recommended. This case constitutes the few reports of myositis ossificans circumscripta of the anterior extremity in dogs diagnosed using thermographic and radiological diagnostic techniques.

Keywords: Dogs, Extremity, Myositis Ossificans Circumscripta, Thermography.

INTRODUCTION

Extra-osseous and non-neoplastic growth of new bone in connective tissue other than muscle is called Fibrodysplasia ossificans. Myositis ossificans is a separate term used to describe heterotopic bone formation within the muscle.1. These forms of ectopic ossification should be distinguished from ectopic mineralization, in which silicate, phosphate, calcium salts and other minerals accumulate in abnormal places2. Myositis ossificans circumscripta or ossifying myopathy is heterotopic bone formation in muscle and is generally classified among idiopathic myopathies. The localized (limited) form is characterized by heterotopic and non-neoplastic bone formation in one or more muscles due to the metaplastic evolution of a fibrotic contracture or myopathy4.

The disease, which is predominantly defined in horses and dogs, was also detected and reported in a kangaroo by Huenerfauth et al.5. Generally, the caudal muscles of the femur, especially the biceps femoris, semitendinosus, semimembranosus, gracilis, sartorius and gluteal muscles, are typically localized in the coxofemoral joint region6. Intense exercise, trauma or intramuscular injections play a role in the formation of the disease3, 4, 6. The form, also known as progressive ossifying fibrodysplasia or generalized ossifying myositis, is more common in young to middle-aged cats3, 7, 8. Recent reports have described the condition of myositis ossificans circumscripta in other dog breeds, but few reports of myositis ossificans circumscripta occur in the forelimb muscles9, 10.

In this case report, myositis ossificans circumscripta, which is rarely encountered in the front legs of dogs, is discussed.

CASE PRESENTATION

In this case report, a case of Myositis ossificans circumscripta encountered in the proximal

part of the left fore-extremity in a 13-year-old male shepherd crossbreed dog was discussed. The patient, who did not respond to conservative treatment and was brought to the Animal Hospital of our Faculty with the complaint of lameness lasting for one month, was recorded in the anamnesis of the lameness that occurred after the traffic accident.

There was no general condition disorder in the clinical examination. However, on inspection, a diffuse swelling of the left forelimb, increasing from distal to proximal, was detected. While edema was detected in the distal parts of the left anterior extremity on palpation, these swellings were found to harden as it progressed proximally. In addition, a hard swelling as hard as a tennis ball was detected in the Triceps brachii muscle at the humerus level (Figure 1).

Figure 1. Image of the swelling in the patient's anterior left leg.

Radiographic examination revealed multiple mineralized densities with irregular borders in the muscle tissue lateral to the caput humerus, proliferative growths protruding beyond the cortex in the proximal 2/3 of the humerus, and irregular radiolucent areas in the medulla (Figure 2).

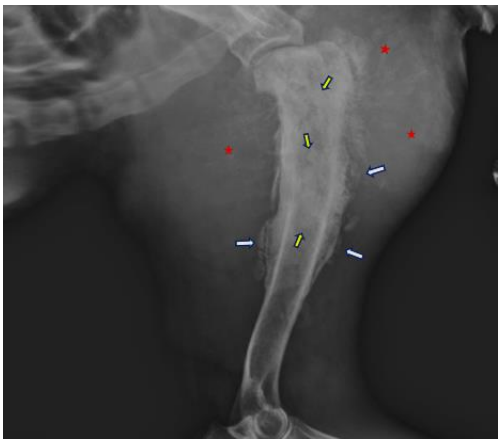

Figure 2. Radiographic view of the case. White arrow: Proliferative growths beyond the cortex, Yellow arrow: Radiolucent areas in the medulla, Red star: Indicates increases in opacity in muscle tissue.

In thermographic imaging, measurements were made on the basis of two symmetrical points and the evaluation was made by comparing the measurements between the two points. As a result of the thermographic evaluation of the forelegs, measurements taken from the symmetrical points revealed high temperature in the proximal part of the left foreleg where hard swellings were intense. While the medial and lateral temperature values in the healthy leg were 31.5°C and 26.1°C, respectively, these values were 36.1°C and 29.9°C in the sick leg (Figure 3).

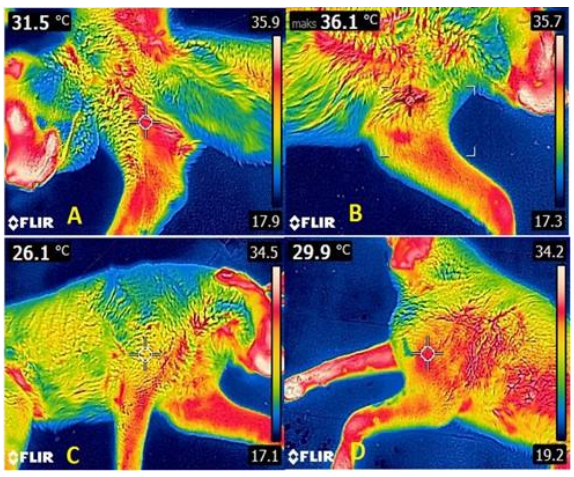

Figure 3. Thermographic images taken from the case. A: Medial of the intact extremity, B: Medial of the sick leg, C: Lateral of the healthy leg, D: Lateral of the sick leg. Temperature increases in both the medial and lateral sides of the patient's leg are remarkable.

The patient diagnosed with myositis ossificans circumscripta was treated 1-3-7. 1 cc (local application at two different points as 0.5) Methylprednisolone (PREDNOL-L 20 mg inj.) treatment at a dose of 40 mg once a week was recommended.

DISCUSSION and CONCLUSION

Myositis ossificans circumscripta is a reactive lesion of tissues adjacent to the bone. It is caused by trauma and contains abundant atrophic or necrotic muscle tissue. The disease is characterized by bone metaplasia or proliferative fibrous connective tissue that responds to damage11. Myositis ossifican circumscripta presents clinically as a painful swelling that rapidly increases in size. Pain and inflammatory symptoms disappear spontaneously after approximately 2-6 weeks, and the mass stabilizes or decreases12. The patient, who was brought to our clinic after approximately 30 days, did not experience any pain response in the areas of swelling in the palpation examination. Myositis ossificans cirkumscripta is a very important pathology in human medicine due to its confusion with osteosarcoma, and this has led medical practitioners to make radical decisions such as chemotherapy and amputation13. The fact that it has been reported very little in the field of veterinary medicine can be associated with the fact that the disease is generally not life-threatening14. The fact that our case had a chronic history and that the case of Myositis ossificans circumscripta was detected late is in line with the literature.

In the differential diagnosis of myositis ossificans circumscripta, irregularity of proliferative growths is expressed as an important finding used to distinguish the lesion from the tumor15. In our radiographic evaluation, we observed irregular proliterative growths protruding beyond the cortex, which excluded our case from the diagnosis of tumor. In cases of Myositis ossificans sircumscripta, mineralization has been reported on radiographs two to four weeks after lesion formation. It has been reported that calcification in the region progresses from the periphery to the center and it takes approximately 14 weeks for the lesion to fully develop16(pp550-553). It is not known how the disease progressed in our case, who had been presenting with lameness for more than a month, since controls could not be performed at the early stage. However, the presence of mineralization in the area of swelling in the radiographic evaluations supports the literature. Radiographically, there is an initial follicular calcification that progresses to mature lamellar bone. The intermediate zone contains osteoid and some areas of immature bone, and at the periphery there is mature trabecular bone with osteoclastic resorption and remodeling. Over time, the entire lesion may ossify, regress, or resorb. Bilateral lesions in the gluteal region in two German shepherds, in the rectus femoris muscle in a Dalmatian and around the triceps insertions in a Siamese cat, have diagnostic pathological and radiographic appearances similar to those seen in humans. There is no invasion into surrounding soft tissues17. In our case, bilateral firm swellings were observed in the triceps brachi and biceps brachii muscles. In our radiographic evaluation, multiple mineralized densities with irregular edges in the muscle tissue around the caput humeri, proliferative growths protruding beyond the cortex in the proximal 2/3 of the humerus, and irregular radiolucent areas in the medulla, which support the literature, support our diagnosis. Ectopic ossification can be confused with the ectopic mineralization that occurs in myositis circumscripta. This condition is seen radiographically as an irregular calcified mass, usually located in the periarticular region, with clear borders and is frequently diagnosed in German shepherd dogs16(pp550-553). Absence of irregular calcified masses in the periarticular region in our radiographic imaging constitutes our differential diagnosis.

Early diagnosis and differentiation of Myositis ossificans circumscripta, which is a tumor-like proliferative lesion, will positively affect the treatment process of the disease. Although myositis ossificans in dogs has been previously described in the hind legs, this case of myositis ossificans sircumscripta diagnosed in the triceps muscle suggests that it may also occur in the forelimb muscles.

CONFLICT of INTEREST

The authors declare that they have no conflict of interest.

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