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A Case of Dermatosis Responding to Immunomodulators in a British Cat

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Abstract: Skin disease is one of the most common diseases in small animal medicine and its treatment is sometimes difficult. The material of this case was a British breed male cat at the age of 5 months, weighing approximately 1.5 kg, with the complaint of alopecia brought to Animal Hospital, Faculty of Veterinary Medicine, Atatürk University. The case was initially diagnosed with superficial pyoderma and amoxicillin + clavulanic acid was administered in the treatment. However, it was observed that the lesions progressed more, and the treatment was terminated. Then, as an immunomodulator, a preparation containing levamisole HCl was applied to the treatment and vitamin D was administered intramuscularly. In the four week of the treatment, it was determined that intense hair growth started in the alopecic areas and at the eight week, the alopecic areas became hairy and the skin thickening improved. In this case report, it is aimed to give information about the treatment of a dermatosis disease that responds to immunomodulators.

Keywords: British cat, Dermatosis, Immunomodulators, Treatment.

INTRODUCTION

The skin is the largest and most multifunctional organ and reflects the activity and health of the structures under its integrity. Although the skin has many functions, its main task is to protect living things from mechanical, chemical substances, pathogens, ultraviolet radiation and even dehydration (1). Dermatological problems are one of the most common problems in pets.

Since the skin is an organ that is most easily exposed to infection and pathogenic factors, so its diseases can be easily understood by owners. Dermatological problems can generally progress with multifactorial, chronic recurrent conditions. The etiology of dermatological diseases in young and old animals varies. While the cases of dermatitis in young animals are mostly demodicosis, otodectis, dermatophytosis, congenital and hereditary diseases, this situation is caused by autoimmune dermatoses, neoplastic diseases and endocrine diseases in old animals (2). Vitamin D (Vit-D) has an immunomodulatory property and its receptors are found in T and B lymphocytes, neutrophils, macrophages and dendritic cells (3). It has been stated that low Vit-D level in cats is formed in mycobacterial infections, inflammatory bowel disease and small cell gastrointestinal lymphomas (4,5). Levamisole has been reported to be effective in treating chronic recurrent bacterial, viral and inflammatory skin diseases (6). In this case report, it is aimed to give information about the treatment of a dermatosis disease that responds to immunomodulators.

CASE PRESENTATION

The material of this case was a British breed male cat at the age of five months, weighing approximately 1.5 kg, with the complaint of alopecia brought to Animal Hospital, Faculty of Veterinary Medicine, Ataturk University.

In the anamnesis, it was learned that the cat had previously been treated in other clinics with the

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suspicion of fungal infection and there was no response to the treatment. Informed consent form was obtained. It was seen that the data was within the reference range in the routine hemogram examination of the blood samples taken from the vena cephalica antebrachi of the sick cat into tubes with ethylenediamine tetraacetic acid (EDTA). A negative result was also obtained in the examination of the area with alopecia with a wood lamp. Subsequently, feather samples received from the area for fungal analysis and deep skin scraping samples to eradicate scabies were found negative. In addition, negative results were obtained in terms of feline immunodeficiency, feline coronavirus, and feline leukemia virus, which they may cause skin diseases. Considering that the case might be superficial pyoderma, amoxicilin+clavulanic acid (Synulox®, Haupt Pharma Latina S.r.l., Latina - Italy) was administered subcutaneously at a dose of 8.75 mg/kg for five days. However, after the treatment, it was determined that alopecia areas spread more from front to back in the head region (Figure 1). After that, the treatment was terminated and levamisole HCl (Levamis 10%®, Provet Veterinary Products San. and Tic. A. S., Ankara-Turkey) known to be an immune system activator/immunomodulator was administered to a dose of 2.5 mg/kg subcutaneously three times with an interval of two days and then it was administered subcutaneously once a week for two weeks. In addition, a single intramuscular dose of 500000 IU of vitamin D (Provet-D3®, Provet Veterinary Products San. and Tic. A. S., Ankara-Turkey) was administered for 10 kg body weight. After four weeks of treatment, intense hair growth was noticed in the alopecic areas of the head area of the cat (Figure 2). In the eight weeks after the treatment, it was observed that all alopecia areas in the head area became hairy and the skin thickening completely recovered (Figure 3).

Figure 1. Alopecia areas in the head area.

Figure 2. Appearance at 4 weeks after treatment.

Figure 3. Complete hair removal of alopecia areas 8 weeks after treatment.

DISCUSSION and CONCLUSION

Skin diseases are common in small animals. Oxidative stress or an imbalance between the

prooxidant and the body's antioxidant defense system is a possible factor in the formation of skin diseases (7). Immunomodulators, immunostimulants, and immunotherapy are used to direct and control the immune system and its response. Drugs that stimulate the immune system in a nonspecific way are frequently used in veterinary medicine. The most commonly used immunostimulants in veterinary medicine are adjuvants used to increase the effectiveness of vaccines (8). Levamisole has been defined primarily as an anthelmintic in farm animals and as a vaccine adjuvant and immunostimulator that increases T and B lymphocyte activity in dogs. It has been reported that the functions of dendritic cells, monocytes and neutrophils increase with the effect of levamisole (9). It has been stated that the combined use of prednisolone and levamisole causes severe regression in more than 50% of systemic lupus erythematosus cases in dogs (10). Vit-D receptors are found in many immune system cells such as macrophages, dendritic cells, T and B lymphocytes (11). Vit-D can activate the immune system by inhibiting proinflammatory cytokines and increasing the level of anti-inflammatory cytokines (12). Vit-D increases the protection of the skin layer. It also reduces inflammation by suppressing toll-like receptor production by monocytes and increasing interleukin-10 production, balancing overproduction of B lymphocytes and immunoglobulin E synthesis (13). In laboratory studies, it has been reported that Vit-D increases the release of antimicrobial peptides such as cathelicidin and beta defensin which prevent skin infections, and stimulates the synthesis of filagrin proteins which have important roles in the formation of the stratum corneum layer of the skin (14). Klinger et al. (15) stated that oral administration of Vit-D in dogs with atopic dermatitis resulted in a reduction in itching and lesions on the skin. In our case, it was concluded that the case of dermatosis was treated by regulating both inflammation and immune balance with the effect of the immunomodulators, which were applied to the cat brought to our hospital with the complaint of alopecia in the skin layer.

In conclusion, this case was considered important in that it reminded the importance of immunomodulators in the treatment, and the stabilization of the immune system significantly affects the course of the treatment.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Nutritional Secondary Hyperparathyroidism in A Cat

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Abstract: This case report was aimed to provide information about nutritional secondary hyperparathyroidism diagnosed in a cat. The case material consisted of a 1-year-old, tabby breed female cat who was a weakness, inability to stand up and not to walk. According to the anamnesis information, it was learned that the appetite of the animal was good, but its nutrition consisted only of foods with high phosphorus content such as salami, sausage, and meat. Radiological examination revealed lordosis in the cervical spine, kyphosis in the lumbar spine, and a small amount of free fluid in the abdomen. The hematologic examination was normal. It was also suggested that meat and meat products such as salami and sausages should not be included in the diet. Kyphosis and lordosis were found to be permanent. As a result, it is concluded that the possibility of nutritional secondary hyperparathyroidism should be evaluated in cats who were fed diets high in phosphorus and with fatigue, inability to stand up, and unable to walk.

Keywords: Calcium, Cat, Nutritional hyperparathyroidism, Phosphorus.

INTRODUCTION

Nutritional secondary hyperparathyroidism (NSH) is a metabolic disease characterized by bone resorption and development of osteopenia as a result of feeding cats and dogs with diets with incorrect and unbalanced phosphorus/calcium (Ca/P) ratio (1, 2). Insufficient vitamin D3, excessive P, and/or insufficient Ca in the diets consumed are responsible for the formation of the disease. The widespread use of commercial formulas in recent years has reduced the incidence of the disease (3, 4).

For bone health, the ideal Ca/P ratio in the diet should be 1/1 or ½. If the P ratio of this balance is disturbed, there is an increase in the secretion of parathormone (PTH), and as a result, hyperparathyroidism is formed. Ca is released from the bones and P is excreted from the kidneys due to hyperparathyroidism. Subsequently, Ca retention occurs in the kidneys. As this situation continues, osteopenias and bone fractures occur in animals due to excessive bone resorption (4). Symptoms of the disease include constipation, weakness, limping, muscle and bone pain on palpation, inability to walk, and sometimes even bone fractures (5-7).

In the diagnosis of the disease, it is reported that calcium and phosphorus levels are normal or decreased, and blood PTH, and vitamin D levels are increased (4,8,9). In the radiographic diagnosis of the disease, it is stated that there is an increase in opacity in the bones forming the skeleton, postural disorder of the spinal cord, pelvic deformation, thinning of the bone cortices, trabeculation in the bones, and bone fractures (4, 10).

Treatment of the disease requires a complete, and balanced diet. For hypocalcemia, parenteral, and oral calcium supplements can be administered. Cage rest can be applied to reduce the risk of bone deformity, and prevent the development of fractures. For animals with fractures or bone pains, analgesia may be required. Ionized light therapy can be applied for bone growth (1).

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This case report, it is aimed to present the clinical, radiographic, and laboratory findings of a rare cat with NSH.

CASE PRESENTATION

The case material consisted of a 1-year-old, 2,5 kg, tabby, the female cat was brought to the animal hospital of the Veterinary Faculty of Atatürk University. In the anamnesis, it was learned that the patient had complaints of constipation, weakness, inability to stand up, and walk and that her appetite was good. In addition, in the anamnesis, it was learned that the diet of the cat only consisted of foods with high phosphorus content such as meat, and meat products such as salami, sausages. Pulse on clinical examination (200/dk), respiratory (64/dk), and body temperature (38.2°C) were detected. Blood samples from the cat were taken from vena cephalica antebrachial and collected into EDTA vacutainers (Vacutainer, K2E 3,6 mg, BD, UK) and plain tubes (Vacutainer, BD, UK) for hematological and biochemical analyses. After leaving for ten minutes at room temperature for clotting, sera were obtained by centrifugation (Beckman Coulter, Allegra® X-30R, USA) at 3000 rpm for 10 minutes and serum sample, the concentration parameters by biochemistry autoanalyzer (Beckman Coulter, AU5800, USA). The hematological analysis was determined by a hematology analyzer (Abacus Junior Vet5, Hungary).

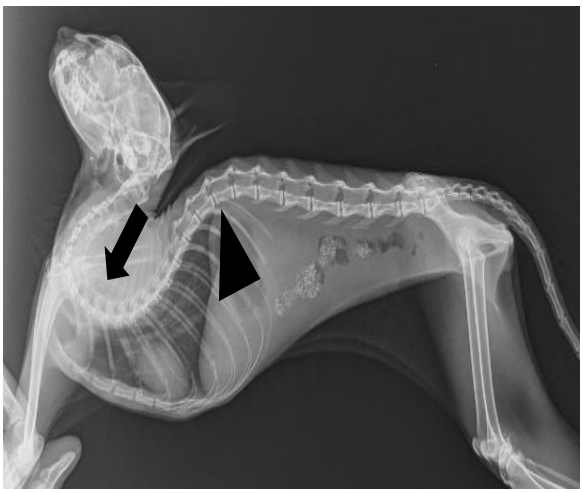
The data of hematological, and biochemical examinations are presented in Table 1. While no abnormality was detected in the hemogram results, an increase in Ca, and P levels were detected in biochemical analyzes.

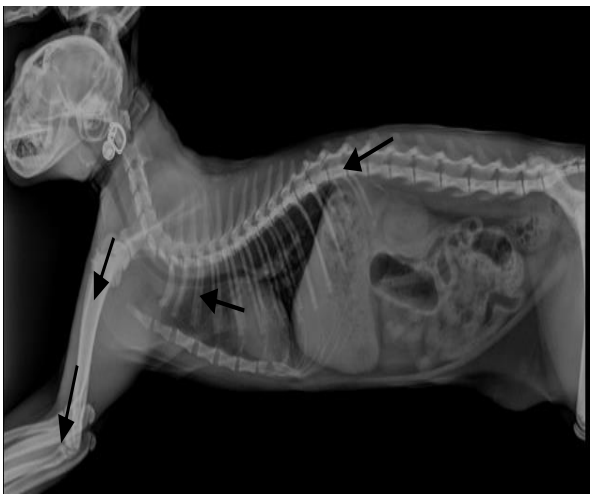
Table 1. Biochemical findings of the case.

Parameter	Result	Reference Values (11)
WBC	$16.95x10^3/\mu L$	$5.5\text{-}19.5x10^3/\mu L$
Ca	11.87 mg/dl	9.4-11.4 mg/dl
P	5.84 mg/dl	2.5-5 mg/dl
Mg	2.48 mg/dl	1.1-2.4 mg/dl
Vitamin D (25 OH)	22.04 ng/ml	14.9-61 ng/ml

WBC: White blood cell, Ca: Calcium, P: Phosphorus, Mg: magnesium

Figures 1 and 2 of the radiographic examination are given. Lordosis of the vertebrae as a result of radiographic examination, and kyphosis image; humerus, radius, ulna, costa, and medial parts of vertebral bones decrease in opacity was detected.





Figures 1 and 2. Radiographic findings of the case (Figure 1. Lordosis (black arrow), and kyphosis (black arrowhead) (Black arrowhead in the vertebral vertebrae. Figure 2. Reduction in radiopacity of humerus, radius, ulna, costa, and vertebral vertebrae (black arrow).).

The patient was diagnosed with NSH by the anamnesis information obtained from the patient, the high Ca, and P levels detected, and the radiographic examination images. Informed consent form was obtained. At a dose of 50-60 ml/kg/day for 7 days in treatment calcium gluconate at a dose of 95-140 mg/kg was added to 0.9% NaCl and administered slowly intravenously. In addition,

furosemide was administered at a dose of 2.5-5 ml/10 kg to accelerate the excretion of P from highs. Afterward clinical evaluations, it was recommended to switch to commercial food with balanced Ca/P content. Serum Ca level was measured again 3 days after the start of the treatment, and it was seen that it regressed to the reference values. However, it was concluded that the formed lordosis and kyphosis may be irreversible due to the severe calcium release.

DISCUSSION and CONCLUSION

Nutritional secondary hyperparathyroidism is a disease that begins with calcium deficiency in the diet and continues with associated hypocalcemia. The response of the organism to the formed hypocalcemia is excessive Ca mobilization from the bones to the blood. This situation leads to demineralization of bones, skeletal defects, and fractures (1, 12). It is stated that there may be a decrease in vitamin D levels in the diagnosis of the disease (12, 13). The Ca/P ratio changes depending on the excess phosphorus intake in the diet. Increased parathyroid activity tends to normalize calcium and inorganic phosphate in the blood. It causes mineral mobilization from bones. Diets with a Ca/P ratio of 1/2 are recommended for treatment. In line with clinical findings, symptomatic treatment, and bone fractures, if any, should be repaired. Vitamin D and calcium supplements should be administered (10).

The increase in osteopenia decreased bone opacity in the humerus, radius, and ulna, and osteodystrophy, and thin cortex findings in the vertebral vertebrae seen in the radiographs of our case overlap with the radiographic images of other cases (14). Therefore, the diagnosis of NSH was strengthened in our case. Anamnesis information obtained from the patient, constipation from clinical symptoms, and radiographic examination images were associated with the mobilization of Ca from the bone under the influence of PTH. Our case Graham et al. (15) coincides with the phenomenon described by (4, 10).

The hypercalcemia detected in our case is not typical for NSH, and the Ca level was higher than expected in NSH. Similarly, in another case with hyperparathyroidism, blood Ca level was found to be higher than normal values. This was associated with an increase in ionized calcium in total serum calcium. This increase was thought to be caused by hyperparathyroidism (10). Diets high in phosphorus cause the organism's P balance to deteriorate, increase PTH secretion, and increase Ca release. The increase in Ca, and P levels, in this case, can be explained by the above mechanisms. In cases of NSH, PTH secretion increases due to the hemostasis of the organism due to insufficient Ca intake in the diet. PTH levels were found to be high in 6 cats diagnosed with NSH (1, 4, 9). PTH level could not be measured. Because no cat-specific kit was used for PTH analysis. This is a shortcoming of the study. However, it is understood that the case is NSH based on the anamnesis, clinical, and radiographic findings, and other biochemical parameters (4, 16). On the other hand, a severe decrease in serum Ca level in NSH has not been reported in every case (10). In another reported case of a cat with NSH, serum calcium, and elevated values are between reference values. It has been stated that this situation may also be caused by nutrition (15).

The interaction of Mg, and Ca in the organism is complex and, Mg and Ca are in balance in the organism. The hypermagnesemia detected in our case is explained by this balance (14). In a few cases of secondary hyperparathyroidism, the serum magnesium level did not differ from the serum Mg levels of healthy cats. Therefore, it was stated that magnesium results are not an important marker in the diagnosis of NSH (4, 17).

In the biochemical examination, it was determined that the phosphorus level was above the reference values. Rowland et al. found elevated serum phosphorus levels in a cat with NSH and reported that serum phosphorus levels tended to be elevated in animals whose diet consisted of mostly meat products (17). Similarly, in the anamnesis

information obtained from the owner of the cat, which constitutes the case material, the fact that the diet consisted mostly of meat products was thought to be the reason for the increase in serum P levels. Despite the widespread use of commercially formulated pet diets, pet owners sometimes do not feed their cats these foods. Therefore, nutritional-related bone diseases are encountered. As a result, those fed with diets that do not have sufficient calcium/phosphorus ratio such as salami and sausage. It was concluded that NSH should also be evaluated in cats with complaints of weakness, inability to stand up, and walk. It was concluded that this situation should be supported by radiographic images and serum biochemical values.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Uterine Rupture in A Pregnant Queen

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Abstract: In the case presented, a 4-year-old, 5 kg-weight Tabby breed pregnant cat who had a traffic accident and was in agony was brought to the Animal Hospital of Atatürk University Faculty of Veterinary Medicine. During the clinical examination, it was observed that the cat's vital function symptoms decreased, a brown foul-smelling discharge came from her vagina, paleness in his mucosa and weakening of his pupil reflex. Ultrasonographic examination revealed that uterine integrity was impaired and the patient was diagnosed with uterine rupture. After informing the animal owner about the patient and getting approval, it was decided that the cat should undergo an emergency caesarean operation. After the cat was taken into general anesthesia with a combination of xylazine and ketamine, she underwent a median line laparotomy. It was determined that the anterior region of the left cornu uterus had ruptured and that there were two dead fetuses in the abdominal cavity along with the uterine contents in the free state. During the operation, the cat developed cardio-pulmonary complications. Despite resuscitation, the cat could not be saved. As a result, it was concluded that the uterus could rupture due to trauma in pregnant cats, and that the level of rupture and the duration of intervention in the case were important in terms of the prognosis of the mother and the cub.

Keywords: Queen, Rupture, Uterine.

INTRODUCTION

Uterine rupture is a phenomenon that can cause maternal morbidity-mortality and perinatal mortality characterized by deterioration of the integrity of the muscular layer of the uterus (1,2). Diagnosis of the case is depending on clinical, radiography, and ultrasonography examination (3). Uterine rupture is associated with torsion of the pregnant uterus, force birth, induction of childbirth by oxytocin and prostaglandin injections, iatrogenic trauma, or pyometra and classified into two types; complete (compulsive) and intimate ruptured. Ruptures involving all layers of the uterine wall have shown excessive bleeding of the uterine veins, and peritonitis is developed as a result of the uterine contents passing into the abdominal cavity (1,4). Uterine rupture should be considered an emergency case and performed immediately emergency cesarean section in a complicated type rupture due to threatening the mothers' health (4). In the case of an incomplete uterine rupture, the serosa layer of the uterus is typically asymptomatic in maintaining its integrity (1).

CASE PRESENTATION

A 4-year-old, a pregnant mixed breed cat weighing 5 kg was presented to the Atatürk University Faculty of Veterinary Medicine Animal Hospital because of a car accident that causes agony. As a result of the clinical examination applied to the cat, a brown stinky discharge showed from the vagina, paleness of mucous membranes, and the pupils reflex weakened was determined. Informed consent form was obtained. Ultrasonographic examination showed that the integrity of the uterus was impaired because of uterus rupture. After informing the owner of the animal about the patient and obtaining his approval, it was decided to perform an emergency cesarean section operation. The cat

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was administration combination of xylazine (2 mg/kg/i.m., Alfazyne® %2, Egevet, Turkey) and ketamine HCl (10 mg/kg/i.m., Alfamine® %10, Egevet, Turkey) for general anesthesia. Following the laparotomy was performed from the median line, it was determined that the uterine of the right corn was shaped in the anterior region of the uterine and that there were two dead fetuses in the abdominal cavity, free of charge with the contents of the uterus (Figure 1,2). Despite the resuscitation procedures, the cat died during the surgery.

Figure 1. Free fetuses due to the uterine rupture.

Figure 2. Uterine rupture caused by abdominal trauma.

DISCUSSION and CONCLUSION

Uterine ruptures are less a common phenomenon in cats than dogs (5). Although it is often observed in pregnant cats, it can also be observed in some pyometra cases (6). Demirel and Acar (7) stated that a cat with stump pyometra had a ruptured uterus and died two days later despite surgical intervention and abdominal irritation. Uterine ruptures usually appear as a result of trauma in pregnant cats. In cases that have been shaped and not intervened in the early stages of pregnancy, it is stated that fetuses implanted in any organ in the abdominal cavity can cause ectopic pregnancy and cause dysfunctions in the relevant organs (8,9).

Abdominal pain caused by vaginal bleeding is clinically the most common findings of uterine rupture. Lucas et al (10) reported that the general healthy condition of the cat with suffering uterine ruptures positive progress, the body temperature is normal (approximately 39 °C) and the mucous membranes is also normal; In palpation, they reported that the abdomen was tense and they detected a non-painful mass in this area. In additional, they stated that there was no discharge and no fetus was found in gonioscopic examination. De Geer (11) showed that no evidence of uterine rupture in both anamnesis and clinical examination but noticed the development of uterine rupture during laparotomy during the postpartum period. In cases where clinical findings of uterine rupture are overlooked, the case may progress and pose a life-threatening threat to the mother. Anamnesis, clinical and ultrasonographic examination results were supported diagnosis in the case of uterine rupture. If the diagnosis of uterine rupture is incorrect or late in animals, it can be life- threatening for both mother and fetuses. Although peritonitis may develop later in the pregnant uterus, free fetuses due to rupture may lose their lives and then be mummified or secondary ectopic pregnancy may take shape in the abdominal cavity. Surgery intervention is recommended immediately in the treatment of uterine rupture and ovariohysterectomy also is considered indicated in irreversible cases (8,9).

In a conclusion, it is an important phenomenon in that the level of rupture and the duration of intervention in pregnant cats affect the prognosis of

mothers and fetuses. However, it is thought that urgent surgical intervention is necessary to reduce the risk of maternal mortality and to eliminate the possibility of ectopic pregnancy in cases of complete uterine rupture.

Conflict of Interest

The authors declare that they have no conflict of interest.

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JOURNAL OF VETERINARY CASE REPORTS

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A Unilateral Uterine Horn Torsion in a Pregnant Angora Cat

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Abstract: Uterine torsion, which causes dystocia is a rare problem in domestic animals except cattle. Uterine torsion is defined as the rotation of the uterine horns around the longitudinal axis of one or both of the uterine horns more than 45°. An Angora cat suffered from dystocia was brought to Atatürk University Animal Hospital Emergency Clinic. According to anamnesis, anorexia and abdominal contractions had begun 48 hours ago in this primiparous cat. In clinical examination, abdominal contractions, lethargy, hypothermia, and vaginal discharge with blood was observed. Because foetuses were dead according to trans-abdominal B-Mode ultrasonography and colour Doppler ultrasonography findings, the operation was performed by caesarean section (C-section). In C-section, 360° left horn uterine torsion along the longitudinal axis around itself was diagnosed. After the diagnosis, ovariohysterectomy was decided because of the risk of unraveling the rotation. However, the mother cat dead before the operation was completed. Uterine torsion, which is a rare and fatal abnormality, should be considered in dystocia cases and should be intervened as early as possible. Additionally, owners should be informed about the abnormalities in parturition process by clinicians.

Keywords: Angora cat, Dystocia, Pregnant, Uterine torsion.

INTRODUCTION

Dystocia is defined as difficulty for delivery arise in parturition time (1), which occurs due to fetal abnormalities (e.g. oversized foetuses, abnormal fetal presentation, position and posture, fetal death, maternal abnormalities (e.g. abnormality of birth canal, uterine inertia, prolonged parturition period, and poor physiological state) or both (2,3).

Uterine torsion is a cause of dystocia, and it is defined as various degrees of rotation of the uterus or a uterine horn around its long axis (4). It is a rare pathology for domestic animals except cattle (5). Uterine torsion is life threatening both for the pregnant cat and foetuses, and its aetiology is unclear. Loosened uterine ligaments, uterine contractions, fetal movements, maternal physical activity during pregnancy were the possible predispositions for the torsion (6,7).

Although clinical signs of uterine torsion are not characteristic, abdominal pain, anorexia, lethargy, abdominal tension and vaginal discharge were defined by previous researchers (8). Due to clinical symptoms are not specific for uterine torsion, experimental laparotomy (celiotomy) is needed for definitive diagnosis (9).

Determination of foetal viability is important for choosing the most suitable intervention method for the treatment. Thus, both B-mode and Doppler ultrasonography can be performed for evaluation of the pregnancy status and viability (10). As the foetuses are alive, C-section can be performed (11). Otherwise, ovariohysterectomy (OHE) rather than reposition of the uterus, should be applied due to risk of release endotoxins and inflammatory mediators (12). Due to surgical approach is inevitable both

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status (death or alive foetuses), urgent fluid therapy and blood transfusion (if provided) should be the first step for the supportive treatment before surgery (7). The present case report describes diagnosis, surgical intervention and prognosis of uterine torsion in an Angora cat.

CASE PRESENTATION

An Angora cat with dystocia was brought to Atatürk University Animal Hospital Emergency Clinic. In anamnesis, abdominal contractions, which started 48 hours ago after jumping from height. In clinical examination, lethargy, hypothermia (36.0°C), abdominal pain and bloody vaginal discharge was observed. In addition, the presence of dehydration of up to 10% was understood by looking at the capillary filling time and skin turgor. Mucous membranes in oral cavity and conjunctiva were pale, and capillary refill time was prolonged. Informed consent form was obtained. The viability of palpable foetuses from abdominal wall were evaluated by B-mode ultrasonography and Doppler ultrasonography. Due to all foetuses were dead, urgent OHE was decided. Following to pre-anesthesia by medetomidine hydrochloride 0.12 mg (0.04 mg/kg, im, Domitor®, Zoetis, Turkey), 0.12 mg butorfanol (0.04 mg/kg, sc, Butomidor®, Richter Pharma®, Austria), propofol 6 mg (3 mg/kg, iv, Propofol-Lipuro®, Braun, Germany) was administrated for induction process. Inhalation anesthesia was provided by sevoflurane (1% Sevoflurane, Piramal Critical Care Inc., USA) with airflow consisted of 50 % O_2. Pre-operative fluid therapy consisted of 100 ml Ringer's lactate (5 ml/kg/hour, iv, Profileks, Turkey) and 30 ml dextran 70 (10 ml/kg/day, Profileks, Turkey).

A unilateral uterine torsion was diagnosed after midline laparotomy. The torsion with 360° along the longitudinal axis at the left uterine horn was observed. As the left uterine horn was cyanotic, the right horn was normal appearance (Figure 1). Since the uterus was tense, a small section was made into the non-torsion horn and the two dead puppies were removed. After reduction of the tense, OHE (removing both ovaries and uterus with resection in bloc technique) was completed. However, the cat died before the operation was completed.

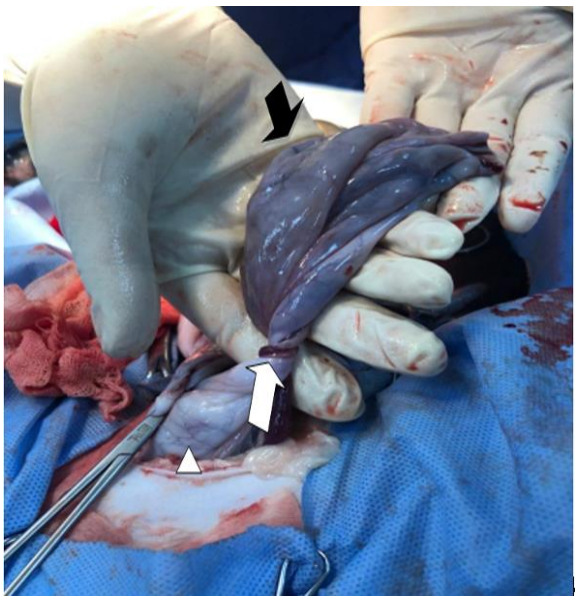

Figure 1. Imagine left of uterine torsion intraoperative. The left uterine horn (black arrow) is dark red in colour and view 360° rotation in the clockwise direction (white arrow) around its base (black arrowhead).

DISCUSSION and CONCLUSION

Uterine torsion, which usually occurs in the last trimester of pregnancy, is a rare predisposing cause of dystocia in cats. (4). In the current report, a unilateral uterine torsion case was defined. In compatible with the previous researchers, this case was seen in the late term of pregnancy (about 60 days) (6). Jumping is commonly defined as predisposing factor for uterine torsion as described in the current report (7). Additionally, clinical signs such as anorexia, lethargy, abdominal pain, vaginal discharge and hypothermia were observed in the presented case in compatible with previous studies (8,13). In veterinary medicine, experimental laparotomy is a unique method to definitive diagnosis (9). Contrast enhanced computed tomography (CECT) method, which is another diagnosis method in human medicine is not used commonly in animal health (7).

The main clinical sign for dystocia is the onset of labor without delivery of fetus or fetal membranes

the absence of parturation following to abdominal contraction related to parturition and later regression of parturition signs. In case of dystocia, vital findings such as hearth beat, foetal movements, presence of placental fluid should be evaluated by trans-abdominal B-Mode ultrasonography and colour Doppler method in cats (3,10,13). An emergence surgical operation should be planned, if the foetuses are not alive or in stress (14). Following to laparotomy, 360-degree rotation was observed as described by De La Puerta et al. (12). As described by De La Puerta et al. (12), uterus was completely removed without correction of rotated tissue to prevent endotoxic shock, which occurred due to endotoxins and other inflammatory products (9).

Blood tests are important because of the marker of anemia and if necessary, the life of the animals can be saved by blood transfusion. In a case report by Kuroda et al. (7), mother that is suffered anemia and kittens survived by blood transfusion. However, in the presented case report blood transfusion was not administrated in addition to fluid therapy. In addition, due to the urgency of the case, the blood test could not be performed. However, lack of blood transfusion alone could not be suggested as a reason of death in this case. Late intervention could be the major reason for this result (7). The side effect of anaesthesia such as respiratory depression, might be another possible reason for death during operation (15).

In conclusion, time interval between occurrence of clinical symptoms and application to clinic can be definitive for diagnosis of uterine torsion. Additionally, deciding experimental laparotomy is needed expertise and experience for clinician. Thus, anamnesis and clinical findings presences before parturition, lethargy, apatheia and depression following to jumping from height at the late stage of gestation could be suspected from uterine torsion. Additionally, owners should be informed for possible problems at the last term of pregnancy and parturition by clinicians. As a result, although it is rarely seen in queen, the possibility of uterine torsion should be evaluated, especially when evaluating dystocia cases.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Congenital Unilateral Lateral Patellar Luxation in A Lamb

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Abstract: In this case, the clinical and radiographic findings of a lamb with congenital and unilateral patellar luxation, together with its surgical treatment, are presented. A 15-day-old lamb was presented with complaints of weakness and lameness in the right hind leg. The radiographic and orthopaedic examination revealed a unilateral 3rd degree patella luxation. The patella was repositioned by performing medial imbrication and lateral release procedures. Following the surgery, the leg was fixed with a bandage for 10 days. Five weeks after the operation, the animal was able to use its feet normally. In conclusion, lateral release and medial imbrication may be sufficient for the treatment of lateral patellar luxation in lambs.

Keywords: Congenital, Lamb, Lateral, Luxation, Patella.

INTRODUCTION

Patellar luxation (PL) is a musculoskeletal disorder characterized by the deviation of the patella from its normal gliding motion over the trochlear groove (1,2). The patella deviates either dorsal, lateral, medial, or rarely ventrally (3). It has been suggested that different types of PL are caused by a multi-causal type of disorder; it is congenital in immature animals and acquired due to traumatic events in adults (2).

The patella is a large sesamoid bone embedded in the tendon of the quadriceps muscle of the femur (4). The femoropatellar joint arises from the trochlear groove of the femur and the patella. The trochlear groove consists of two oblique medial and lateral trochlears (5).

During patellar luxation, one or both of the trochlear ridges flatten, allowing the patella to slide out of its normal path (2). The fixation and movement mechanisms of the patella are mainly controlled by the femoropatellar and patellar ligaments. This mechanism is lost in patellar luxation and causes joint locking (5). Patellar luxations have been described in many species, including dogs, lamas, rabbits, cats, foals, sheep and horses (6). It has been determined that the causes of patellar luxations may be congenital, developmental or traumatic (5). Causes of congenital patellar luxation involve weakness of the medial patellofemoral ligament, hypoplasia of the trochlear groove, medial rotation of the tibia, and the posture position in the uterus (7).

The treatment methods for patella luxation include, lateral or medial desmotomy, medial (lateral) imbrication of the joint capsule and fascia, lateral (medial) tibial tuberosity transposition, osteotomies of femur or tibia, and trochleoplasty (8). This case report was aimed to present the successful treatment of LPL in a lamb.

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CASE PRESENTATION

A 15-day-old male pure-bred Akkaraman sheep weighing 10.5 kg was presented to Ataturk University, Faculty of Veterinary Medicine Animal Hospital, with severe unilateral right hind limb lameness and an inability to completely extend the stifle. The owner reported the calf has been reluctant and difficult to stand up.

During the clinical evaluation, no abnormality was observed in the lamb irregular posture, and gait. The patella was dislocated immediately to the lateral side of the bone after manual repositioning in the trochlear groove of the femur. A grade III unilateral congenital LPL was diagnosed. The quadriceps femoris muscle was also laterally deviated and poorly developed. The patellar reflex and withdrawal reflex were neurologically determined to be normal. Informed consent form was obtained.

The radiographic examination was performed under the xylazine (0.1 mg/kg IM, Xylazinbio 2%, Bioveta PLC, Komenskeho, Czech Republic) and propofol (3 mg/kg IV, Propofol % 1, Fresenius, Istanbul, Turkey) administration. The stifle radiographs obtained in craniocaudal and mediolateral directions confirmed the lateral displacement of the right patella (Figure 1-2).

The lamb was operated on after 8-hour fast. Prior to surgery, flunixin meglumine (1.1 mg/kg IM, Flumeglin, Teknovet, Istanbul, Turkey) and cefazoline (22 mg/ kg IV, Cefamezin®, Eczacibasi, Istanbul, Turkey) were given. Premedication was performed with xylazine (0.1 mg/kg IM, Xylazinbio 2%, Bioveta PLC, Komenskeho, Czech Republic) and induced with ketamine (2.2 mg/kg IV, Ketasol, Richter Phama, Wels, Austria). During the surgery, an isotonic crystalloid fluid (NaCl 0.9%) was administered at a 10 ml/kg/h constant rate during the surgery.

The lamb was positioned in dorsal recumbency and aseptic preparation of the skin was achieved by using a hanging limb technique. A 5 cm medial and lateral parapatellar incision was performed on the skin, then subcutaneous fascia, fascia genus, and joint capsule. The lateral femoro-patellar ligament and gluteo-biceps muscle were transected without invading the joint. The patella was replaced into the trochlear groove, then the medial joint capsule and the entire length of the patella were imbricated with simple interrupted sutures with USP 2 polydioxanone (PDS II, Ethicon, USA) without invading the femoro-patellar joint (Figure 3). The position of the patella was confirmed with flexion, extension, and rotation movements. The subcutaneous fascia, the subcutis layer, and the skin were closed in a simple interrupted suture with 2-0 polyglactin 910 (Vicryl, Ethicon, USA) and 2-0 poliglecaprone 25, respectively (Monocryl, Ethicon, USA).

Figure 1. Cranio-caudal radiograph of stifle joints with right patella luxated laterally (a) - Postoperative radiographic image of the replaced right patella (b).

The position of the patella was confirmed by radiography of the stifle. Postoperative treatment involved intramuscular administration of 2.5 mg/kg enrofloxacin (Baytril, Bayer, Istanbul, Turkey) and 1.1 mg/kg flunixine meglumine (Flumeglin, Teknovet,

Istanbul, Turkey) for 5 days. The right limb was immobilized for 10 days following the surgery. The skin stitches were removed 13 days after surgery and a radiographic examination was performed to verify the condition of the patella.

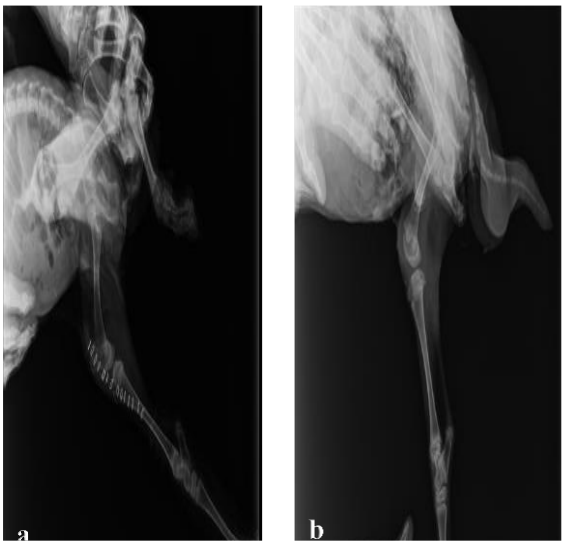

Figure 2. Mediolateral radiograph of stifle joints with right patella luxated laterally (a)- Postoperative radiographic image of the replaced right patella (b).

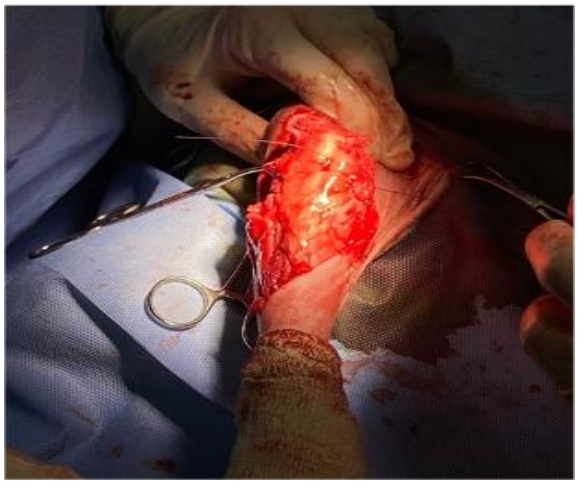

Figure 3. Intraoperative view of the lateral release of the patella and imbrication sutures of the medial retinaculum.

DISCUSSION and CONCLUSION

This case report documents the successful surgical treatment of unilateral, congenital lateral patellar luxation, evaluated by radiographic in a 15-day-old Akkaraman lamb. Congenital lateral patellar luxation is uncommonly observed in sheep (6). Patellar luxations have been reported in various species. The etiological reasons for patella dislocations are classified as congenital, traumatic, and developmental (5,9). Traumatic events at the time of parturition, including prolonged parturition or malpositioning of the fetus during parturition, could result in rupture of the patellar retinacula, damage to the patellar tendon, or femoral nerve deficit with concurrent quadriceps dysfunction resulting in abnormal patellar location (10). Traumatic patella luxation is generally observed in large animals and mostly they are congenital (11). However, congenital patellar luxation was defined unilaterally in our case.

Surgical treatment of patellar luxation aims to neutralize the extensor mechanism and stabilize the patella in the femoral trochlea. Surgical treatment of LPL includes the lateral release of the patella followed by imbrication of the medial aspect of the joint capsule trochleoplasty, prosthetic trochlear ridge, or tuberosity medial transplantation (11). In this case, the sheep with LPL was treated successfully with a lateral parapatellar release incision in combination with imbrication of the medial joint capsule.

In conclusion, congenital LPL may be observed unilaterally in the sheep and LPL can be treated with lateral parapatellar release incision in combination with the implication of the medial joint capsule without the need for any other surgical method.

Conflict of Interest

The authors declare that they have no conflict of interest.

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Thermographic Evaluation of Second Carpal Bone Fracture in a Javelin Horse

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Abstract: Poor carpal structure, high-speed gallop exercise, racing, and chronic carpal diseases can be considered as predisposing factors of equine carpal fractures. This case report was aimed to present the evaluation of thermographic findings of a 7-year-old male javelin horse with a second carpal bone fracture. The dorsal view of healthy left carpal joint was measured as 26.8°C, while the dorsal view of the right carpal joint was recorded as 29.9°C. After clinical and thermographic examination, dorsopalmar and lateromedial radiography of the left carpal joint were obtained. Radiographic examination revealed second carpal bone slab fracture in the left forelimb of the horse. In conclusion, thermographic examination may be superior to radiography for determining the localization of lesions. The increase in temperature eventually causes inflammation at the surrounding region, which can be detected by using the thermography.

Keywords: Equine, Inflammation, Lameness, Radiography, Thermography.

INTRODUCTION

The carpal joint in horses is a complex joint made up of seven bones. Carpal bone fractures may occur in horses as a result of acute or chronic traumas. Clinical symptoms include pain on palpation, swelling and lameness. There are three basic types of carpal fractures: chip, corner and slab. Fractures involving two adjacent joints, an upper and a lower one, are called slab fractures. Slab fractures are common in Arabian horses and mostly formed in the third carpal bone (1).

The diagnosis of carpal fractures is made using anatomical imaging techniques such as ultrasonography, radiography, computed tomography and magnetic resonance imaging (1). Thermography, a physiological imaging modality, provides non-invasive evaluation of associated structure (2). Because thermography can show the localization of injury, it protects veterinarian from the harmful effects of radiographic scanning (3,4). However, it does not give precise information about the specific nature of the problem (2,3). The aim of this case report was to present the thermographic evaluation of second carpal bone fracture in a javelin horse.

CASE REPORT

A 7-year-old male javelin horse brought to Atatürk University Veterinary Faculty, Animal Hospital with complaints of chronic lameness, pain on palpation, swelling in the region. Resting was applied by owner to the horse for 2 weeks after the trauma, training was not done during this period, but it was unsuccessful. Informed consent form was obtained. For thermographic examination horse was rested 15 minutes in a closed room without sunshine. Thermographic examination was performed before to the clinical examination because physical examination may alter the temperature over the region. A thermal camera (IR Flexcam-S®, Burlington-USA) was used to detect the temperature differences between the left and right forelimbs. The dorsal view of the left carpal joint was measured as 26.8°C

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(Figure 1), whereas dorsal thermogram of the right carpal joint was recorded as 29.9°C (Figure 2). In the clinical examination, flexion of the carpal joint caused a pain response. After thermographic and clinical examinations, radiographs of the left carpal joint from the cranio-caudal (Figure 3) and latero-medial (Figure 4) views were obtained. Radiographic examination revealed a slab fracture in the second carpal bone of the left forelimb.

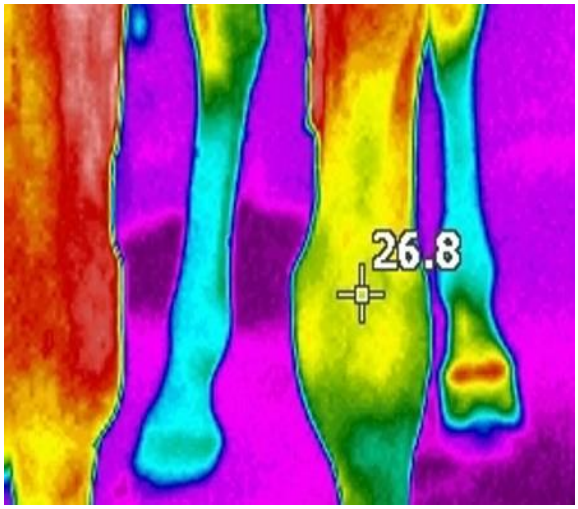

Figure 1. The dorsal thermographic viev of healty left carpal joint.

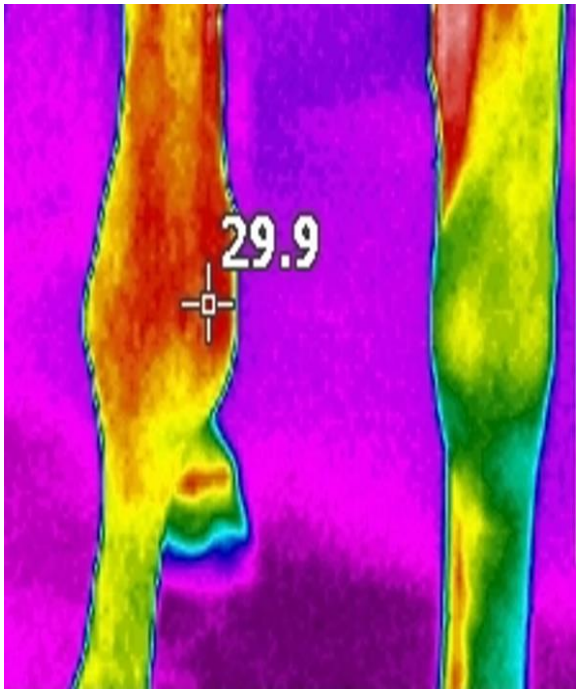

Figure 2. The dorsal thermographic view of the slab fracture in the second carpal bone on the right forelimb.

Figure 3. The cranio-caudal radiographic view of the slab fracture in the second carpal bone on the right forelimb.

Figure 4. The latero-medial radiographic view of the slab fracture in the second carpal bone on the right forelimb

DISCUSSION and CONCLUSION

This case report indicates that thermography may be used for the detection of the localization of the orthopedic problems in horses. This finding is consistent with previous studies which stated that thermography could be utilized if the region is close

contact with the skin (3,5). Thermography has been mainly used for the direct diagnosis of dorsometacarpal disease and laminitis in horses (5). With the use of thermography may demonstrate physiological changes over the observed structures. Although thermography helps to detect the localization of the disorder, it is not sufficient to exact diagnosis of the situation. Therefore, alternative imaging modalities such as radiography are needed for certain diagnosis (3).

Thermographic evaluations should be conducted on four different views including dorsal, palmar, medial and lateral directions (4). In this study, only dorsal temperature of the carpal joint was measured. Previous work has been pointed out that dorsal and medial views of the carpal joint display the temperature related with inflammation (3). It has been emphasized that if the temperature differences between two symmetrical regions is above the 1°C, it could be considered as important sign for diagnosis (4). In this case report, the temperature difference between left and right carpal region was about 3°C, which shows the inflammation over the fractured area.

In conclusion, thermographic examination may be superior to radiography for determining the localization of lesions. The increase in temperature eventually causes inflammation at the surrounding region, which can be detected by using the thermography.

Conflict of Interest

The authors declare that they have no conflict of interest.

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