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Case Report

Dystocia management in a Scottish Fold cat with caesarean section and ovariohysterectomy at Winadivet clinic Malang

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ABSTRACT

The causes of dystocia can be categorized into maternal and fetal factors. Dystocia is most commonly observed in queens that are giving birth for the first time. This study aims to assess the diagnosis and management of maternal dystocia in Scottish Fold cats through caesarean section (C-section). A general examination, including palpation, revealed the presence of a fetus, followed by an ultrasound to determine the number of fetuses and their viability. A hematological examination was conducted prior to the surgical procedure to assess the presence of anemia in the patient. A C-section was performed on the ventral aspect of the abdomen, followed by ovariohysterectomy after the successful removal of two live fetuses. Postoperative care involved the administration of the antibiotic Colibact, the anti-inflammatory meloxicam, supportive therapy including Channa Lakta (lactation stimulant), Channafit (immunomodulator), and the multivitamin Pantex. The results indicated that the wound of the patient, Koko cat, had closed by the third postoperative day. It can be concluded that appropriate treatment and management contribute to a rapid recovery process.

Keywords: Dystocia, fetus, ovariohysterectomy, sectio caesaria

INTRODUCTION

Dystocia is a reproductive disorder that causes difficulty in parturition. It typically occurs in females that are giving birth for the first time. The causes of dystocia are generally attributed to factors such as large fetal size, abnormal fetal position, incomplete cervical dilation, uterine failure to contract, uterine fatigue, uterine torsion, and multiple fetuses (Aprily *et al*., 2016). The incidence of dystocia in cats has been reported to range from 0.4% to 8.0% (Holst *et al*., 2017).

Dystocia in queens refers to the inability to deliver a fetus through the birth canal (6-12 hours). The primary cause of dystocia is uterine inertia, which can be classified into primary and secondary uterine inertia. Primary uterine inertia is characterized by the failure of the uterine muscles to contract and may result from nutritional imbalances, age, deficiencies in neuroendocrine regulation, and systemic diseases (Niyas *et al*., 2023). Secondary uterine inertia occurs due to fatigue during labor caused by excessive pushing, often accompanied by an obstruction in the birth canal (Naoman, 2021). In

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small animals, dystocia management can be performed using various methods, depending on the underlying factors. Surgical intervention using the caesarean section (C-section) method is indicated when medical therapy fails to achieve a response (Greco and Davidson, 2017).

This article aims to describe the surgical procedures for C-section and ovariohysterectomy (OH), as well as the management of dystocia case in a Scottish Fold queen.

MATERIAL AND METHODS

A 1-year-old Scottish Fold queen cat (Figure 1), named Koko, weighing 3.4 kg, was presented to the Winavet Petcare Clinic in Malang on Sunday, April 28, 2024, with signs of dystocia.

Figure 1 Koko and her four kittens following surgery

Anamnesis

Prior to visiting the clinic, Koko had given birth to two kittens at dawn. Approximately 12 hours later, Koko was brought to the clinic as she was no longer experiencing contractions. This was Koko's first pregnancy and delivery, having mated with a British Shorthair (BSH) breed.

Clinical symtomps and physical examination

On physical examination, Koko's weight was measured at 3.4 kg, body temperature was 38.3 °C, skin turgor was >2, mucous membranes appeared pale, and her body condition score (BCS) was 2.5/5. Mucopurulent discharge was observed in the vagina. Palpation of the abdomen revealed the presence of approximately two fetuses, identified by their heads and backs.

Ultrasound examination (USG)

An ultrasound examination examination was performed as a supporting diagnostic tool. Prior to the ultrasound, the hair on Koko's abdomen was shaved to improve image quality. Ultrasound gel was applied to the shaved skin, and the probe was moved slowly over the abdomen to examine the organs and fetuses.

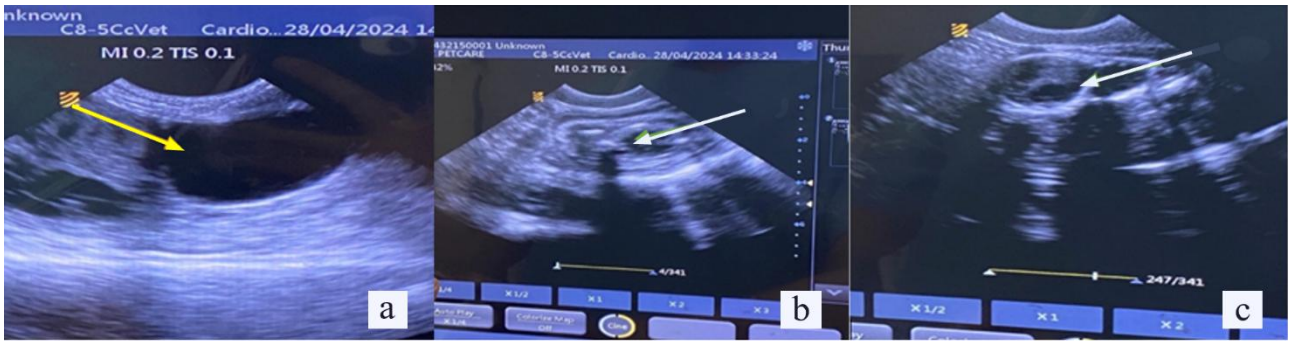

Figure 2 Ultrasonography showing two living fetuses with gestational sacs; yellow arrow indicates the urinary bladder (a); green arrows indicate the live fetuses, fetus 1 (b) and fetus 2 (c)

Hematology examination

The results of the blood tests (Table 1) indicate that Koko, has leukopenia. Leukopenia is a condition characterized by a decrease in the number of leukocytes (Audina *et al*., 2019). The leukopenia observed in Koko may be caused by inflammation. Granulocyte values that fall below the normal range are referred to as

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granulocytopenia. Granulocytopenia is defined as a reduction in granulocytes below the normal levels, and this condition can occur due to various causes (Hermawan *et al*., 2022). The lymphocyte levels in Koko were found to be elevated, indicating lymphocytosis. Increased granulocyte and lymphocyte levels can occur as part of an inflammatory response. Hemoglobin values were found to be lower than normal, suggesting hemoglobinemia. Hemoglobinemia in Koko could be caused by several factors, including bleeding, poor nutrition, or deficiencies in iron, folic acid, or vitamin B12 (Tutik and Ningsih, 2019). The hematocrit (HCT) value was also low, indicating a reduction in the percentage of circulating red blood cells (Prudenta *et al*., 2021). Koko's P-LCR value was low. Based on the hematological examination, Koko was diagnosed with inflammation, as evidenced by elevated granulocytes and lymphocytes, but did not exhibit anemia since the red blood cell count (RBC) remained normal. A decrease in RBC, hemoglobin (Hb), and HCT is indicative of anemia (Prudenta *et al*., 2021).

Table 1 Results of hematological examination

test	result	unit	reference	note
WBC	4.3	10^3/µL	5.5-19.5	L
LYM#	4.1	10^3/µL	0.8-7	normal
MID#	0.1	10^3/µL	0-1.9	normal
GRA#	0.1	10^3/µL	2.1-15	L
LYM%	95	%	12-45	H
MID%	2.3	%	2-9	normal
GRA%	2.7	%	35-85	L
RBC	4.78	10^6/µL	4.6-10	normal
HGB	8.8	g/dL	9.3-15.3	L
MCHC	37.9	g/dL	30-38	normal
MCH	18.4	pg	13-21	normal
MCV	48.5	fL	39-52	normal
RDWCV	16.2	%	14-18	normal
HCT	23.1	%	28-49	L
PLT	324	10^3/µL	100-514	normal
MPV	8.2	fL	5-11.8	normal
PDW	14.4	fL	10-18	normal
PCT	0.265	%	0.1-0.5	normal
P-LCR	11.3	%	13-43	L

H: high; L: low

Diagnosis and prognosis

Based on the history, physical examination, and clinical findings, the diagnosis for Koko was dystocia. Dystocia occurs when one or more of the three main components of the birth process fail: the mother's ability to push, the birth canal being too narrow, or the size and position of the fetus (Amrozi *et al*., 2020). The differential diagnosis in this case includes pyometra. The prognosis in this case was poor.

Treatment

The procedure performed on Koko was a C-section, which was performed on May 28, 2024. A physical examination before the operation showed that Koko had pale mucosa, was well-hydrated, and in a calm condition. Prior to surgery, Koko was given 34 mL of physiological NaCl solution intravenous drip, at a rate of 5 mL/kg/hour. Additionally, 6 mL of biodin was administered intravenously. Biodin is used to boost energy levels in animals due to its content of ATP and aspartate (Naomi *et al*., 2019). Following this, the pre-anesthetic drug V-Tropin was injected subcutaneously at a dose of 0.02 mg/kg bw. V-Tropin 0.3% contains atropine sulfate, an anticholinergic drug that inhibits the action of acetylcholine, preventing the depressive effects caused by anesthetic preparations. It also prevents bronchial and salivary secretions, reduces vomiting, and increases the heart rate. Typically, atropine is administered 20 minutes before a combination of ketamine and xylazine anesthesia (Rahmiati and Wira, 2019). Ketamine was given intramuscularly at a dose of 10 mg/kg bw. Ketamine is a dissociative anesthetic that stimulates cardiovascular metabolic processes, salivation, and increases body temperature, heart rate, and arterial pressure. However, ketamine may cause muscle tension (Apritya and Ardiani, 2015). Xylazine, a sedative and analgesic with muscle-relaxing effects, was administered intramuscularly at a dose of 2 mg/kg bw. The cat was positioned dorsally on the operating table, and all four limbs were restrained. The abdominal area was sterilized using alcohol and povidone-iodine, applied with cotton in a circular

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motion from the inside out, and a sterile drape was placed over the surgical site. A 5 cm incision was made in the ventral abdominal area, and the linea alba was widened cranially and caudally to access the abdominal cavity. The incision was then secured with clamps. The first surgical procedure performed was OH, which involved exteriorization of the ureus (Figure 3a), ligating and incissing the suspensory ligament to remove the ovaries and ligating the uterine body (Figure 3b) below the uterine bifurcation. A longitudinal incision was made in the uterus to extract the fetuses. The fetuses were removed one by one, ensuring that none remained in the uterus. After the fetuses were expelled, they were cleaned and their condition assessed. The abdominal cavity was flushed with sterile NaCl fluid, and the wound was closed in layers: the peritoneum and muscle layers using simple interrupted sutures with PGA thread no.3 (Aviacryl), and the skin with intradermal and interlocking sutures (Figure 3c, 3d). Penstrep antibiotics were administered post-surgery. The surgical area was covered with sterile gauze and hypafix.

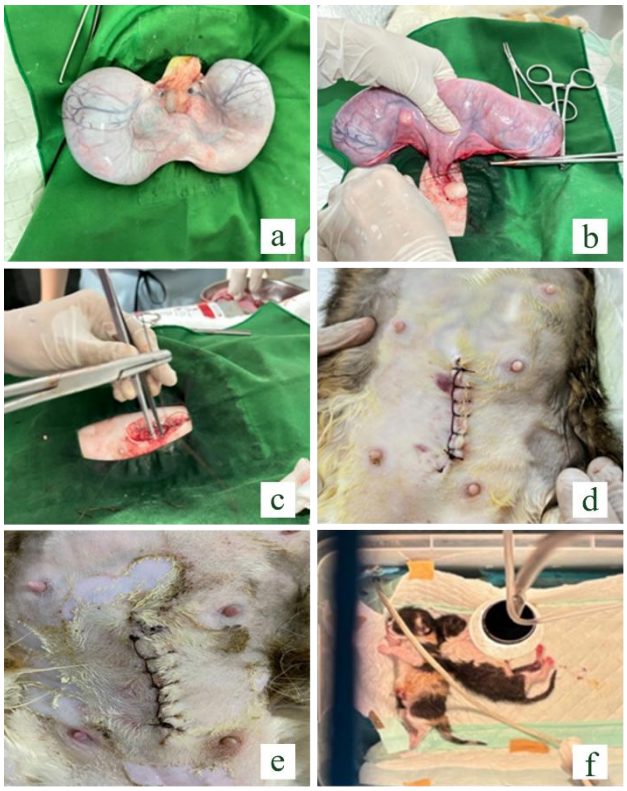

Figure 3 Images taken during the procedure; the cat's uterus was exteriorized from the abdominal cavity (a); the uterine body was ligated, followed by a longitudinal incision in the uterus to remove the fetus (b); wound closure was performed using a simple interrupted pattern on the peritoneum and muscles (c); the skin was sutured using an intradermal interlocking pattern (d); post-operative wound of Koko on day-3 (e); two fetuses of Koko (f).

Post-operative care

Post-surgery, Koko's condition was monitored, including the condition of the surgical wound and overall physical health. The post-operative wound was checked on the third day after surgery (Figure 3e). Koko was treated with Pantex subcutaneous injection (0.35 mL, multivitamin) daily in the morning. Meloxicam (0.15 mg/kg bw) and Colibact (0.35 mL), both were injected subcutaneously every day in the afternoon. Imboost (2 mL) and Channafit (1 mL, appetizer) were given orally twice a day, and Chana Lakta (1 capsule) was given orally once a day. All treatment were given for 3 days. The following day (May 1, 2024), Koko was discharged and sent home with a prescription for a combination of antibiotics, including cotrimoxazole (Sanprima 480 mg, 0.6 tablet), Channa Boost (0.5 capsule), and vitamin B complex (1 tablet), formulated into 6 capsules to be taken twice a day for 3 days.

.RESULTS

Two fetuses were successfully delivered through the C-section at the Winadivet Veterinary Clinic (Figure 3f). One day after the C-section and OH, Koko returned to normal activities such as eating, drinking, and breastfeeding.

DISCUSSION

In this case, Koko, a queen cat, was brought to the clinic after delivering two fetuses. However, no further signs of birth were observed, despite the Koko's abdomen remaining

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distended. Ultrasound examination revealed two additional living fetuses (Figure 2), indicated by their beating hearts. The owner requested a C-section, which was performed alongside an OH. Before surgery, Koko received fluid therapy and a hematology examination. The results indicated no anemia, but an inflammatory response was evident from the increased lymphocytes and granulocytes.

The average gestation period for cats is 65 days (range 57-72 days), and the birth process occurs in three phases. Phase I (12-24 hours before birth) involves restlessness, reduced appetite, a drop in body temperature, and cervix dilation. Phase II (6-12 hours before birth) is characterized by normal body temperature and the fetus entering the birth canal. Phase III involves the expulsion of the placenta and the mother licking the fetus (Moura *et al*., 2023). The time difference between the expulsion of the first fetus and the expulsion of the third fetus was nearly 8 hours. Typically, the expulsion of a cat's fetus occurs within 6 hours after the birth of the first fetus. While the interval between births can vary, about 95% of kittens are born within 100 minutes of each other. This differs from dystocia, where the normal progression of labor is disrupted, potentially threatening the health of the mother, fetus, or both. The causes of dystocia can be categorized into maternal or fetal factors. Maternal causes are further divided into uterine inertia, systemic disease in the mother, previous pelvic fracture, obstructive mass in the cervix or vagina, cervical fibrosis, or the presence of a vaginal septum.

Uterine inertia is defined as the failure to expel a neonate despite the birthing mother having an open birth canal and a seemingly normal fetus, with or without intermittent or weak abdominal contractions (Bailin *et al*., 2022). In this case, maternal dystocia may have occurred because the queen was giving birth for the first time, and the birth canal was not fully open.

Dystocia has a direct detrimental effect on the fetus, including hypoxia, acidosis, and death. In contrast, the negative effects on the mother include trauma, metritis, and endometritis (Haben and Guesh, 2020). Efficient diagnosis of dystocia depends on obtaining a precise history and conducting a thorough physical examination in a timely manner. Accurate reproductive history, including breeding date, time of ovulation, birth history, and general health history, is essential for confirming the diagnosis and determining the appropriate medical treatment (Greco and Davidson, 2017).

The treatment performed on Koko was a C-section to deliver the fetus that remained in the uterus, confirmed through ultrasound examination. A C-section was chosen because Koko was no longer able to labor, and the owner opted for sterilization. A C-section is defined as the delivery of a fetus through a surgical incision in the abdominal wall and uterus. This procedure can be either elective or emergency. An emergency C-section is indicated in cases such as primary or secondary uterine inertia, unresponsiveness to medical therapy, uterine rupture due to dystocia or the side effects of prepartum drugs, fetal maldisposition that cannot be corrected through vaginal manipulation, fetal death, or critical fetal conditions characterized by a decrease in heart rate. The normal heart rate at the end of a cat's pregnancy is approximately 230 beats per minute. Elective C-sections are indicated for conditions such as primary pelvic abnormalities (traumatic or anatomical), soft tissue abnormalities (such as vaginal septa), pregnancy-related diseases (such as Addison's disease or diabetes mellitus), and a history of dystocia in previous pregnancies (Greco and Davidson, 2017). After the C-section and OH, which lasted approximately 2 hours, Koko was transferred from the operating table to a clean cage equipped with an underpad and a lamp for warmth. The fetuses successfully removed during the procedure consisted of two living kittens. These fetuses were cleaned and reunited with the two kittens that had been delivered normally earlier in the cage. Post-operative drug treatment for Koko included Meloxicam, Colibact, Imboost, Channafit, Chana Lakta and Pantex. Meloxicam is a non-steroidal anti-inflammatory drug (NSAID) that works by inhibiting enzymes responsible for producing

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prostaglandins, compounds released by the body that cause pain and inflammation. By inhibiting prostaglandin production, Meloxicam helps reduce pain and inflammation (Nopitasari *et al*., 2022). Colibact is a sulfonamide antibiotic with a broad spectrum of activity against both gram-negative and gram-positive bacteria (Panie *et al*., 2022). The use of broad-spectrum antibiotics is recommended to prevent secondary bacterial infections, which could delay the wound healing process (Distira *et al*., 2024). Imboost is a multivitamin product used to enhance immune function and support overall body endurance (Wardhani *et al*., 2021). Channafit is a combination of an immunomodulator, Curcuma, honey, and snakehead fish extract, aimed at further supporting Koko's recovery. The albumin found in snakehead fish plays a crucial role in the body's immune response to infection, making it an important factor in the post-operative wound healing process (Fitrianti *et al*., 2023). Additionally, albumin functions as an immunomodulator, as it can protect the immune system from free radical compounds that may cause immune system damage (Niga *et al*., 2022). Chana Lakta is a lactation stimulant. Pantex is a multivitamin which is essential for the body and provide significant health benefits. They contain complex compounds required in small amounts and play an important role in regulating various bodily functions (Pratiwi *et al*., 2020).

Koko recovered well and resumed normal activities. On the 4th day, May 1, 2024, Koko was discharged and sent home with a prescription for an antibiotic mixture. The prescribed antibiotic formula for Koko included cotrimoxazole (Sanprima 480 mg, 0.6 tablets), Channa Boost (0.5 capsules), and vitamin B complex (1 tablet), which were compounded into a preparation of 6 capsules. These capsules were to be administered twice a day for 3 days.

CONCLUSION

In conclusion, based on clinical examination and ultrasonography, Koko was diagnosed with dystocia. The chosen treatment of C-section and OH resulted in the successful delivery of two live fetuses. Post-operative treatment was administered, and Koko's wound was fully healed by the third day. This case highlights that C-sections and OHs can be performed together when there is no intention for future reproduction.

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AUTHOR'S CONTRIBUTIONS

Intan Firdha Olien Noor Al Ichsan (IFONAI), Gretania Residiwati (GR), Galuh Chandra Agustina (GCA), Winda Syafitri (WS).

IFONAI and GR conceived the idea, acquired data, and drafted the manuscript. GCA and WS critically read and revised the manuscript for intellectual content. All authors read and approved the final manuscript.

CONFLICTS OF INTEREST

The authors declare that they have no competing interests.

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REFERENCES

Amrozi, Soehartono RH, Adisya ER, Mahardi I, Mukarromah H, Satria MI, Achmadi B, Kamiring, A, Latif AA. 2020. Operasi caesar kasus distokia pada kuda miniature. ARSHI Vet Lett. 4: 45-6.

Aprily NU, Sambodho P, Harjanti DW. 2016. Calving evaluation of dairy cattle in Balai Besar Pembibitan Ternak Unggul dan Hijauan Pakan Ternak, Baturraden. J Pet Indones. 18: 36-43.

Aprilianti Y, Ragmiati DU, Setyoeati EY, Dahlan A. 2020. Potency of ketamine hydrochloride, atropine sulphate, and xylazine hydrochloride combination as in

How to cite this article: Al Ichsan IFON, Hendrawan VF, Residiwati G, Agustina GC, Syafitri W. 2025. Dystocia management in a Scottish Fold cat with caesarean section and ovariohysterectomy at Winadivet clinic Malang. Ovozoa: Journal of Animal Reproduction. 14: 39-45.

anesthetic agent on domestic male cats. Indones Medicus Veterinus 9: 475-8.
Apritya D, Ardiani T. 2015. Perbandingan mula dan lama kerja anestesi umum dengan premedikasi antara acepromazine dengan kombinasi acepromazine-atropine sulfat pada kucing lokal (*Felis domestica*). J Vitek Bidang Kedokteran Hewan 5: 1-6.
Audina NT, Yusmawan W, Naftali Z, Suprihati. 2019. Perbandingan kejadian leukopenia dan trombositopenia pada penderita karsinoma nasofaring yang mendapatkan kemoterapi Paclitaxel Cisplatin dan Cisplaton 5-Fluirouracil (5-FU). J Kedokteran Diponegoro 8: 1187-96.
Bailin HG, Thomas L, Levy A. 2022. Retrospective evaluation of feline dystocia: clinicopathologic findings and neonatal outcomes in 35 cases (2009–2020). J Feline Med Surg. 24: 344-50.
Distira LAY, Wirata IW, Wandia IN. 2024. Enucleasi of bulbus oculi prolapsus in terrier mix. J Ilmu Kesehatan Hewan 8: 72-80.
Greco DS, Davidson AP. 2017. Blackwell's Five-Minute Veterinary Consult Clinical Companion: Small Animal Endocrinology and Reproduction. John Wiley & Sons.
Haben F, Guesh N. 2020. Dystocia due to secondary uterine inertia in dog and its surgical management. Int J Clin Stud Med Case Rep. 4: 1-3.
Hermawan IP, Darantika G, Lonai NB. 2022. Studi kasus: Canine parvo virus pada anjing Boston di Lingkar Satwa Animal Care. J Vitek Bidang Kedokteran Hewan 12: 1-7.
Holst BS, Axnér E, Öhlund M, Möller L, Egenvall A. 2017. Dystocia in the cat evaluated using an insurance database. J Feline Med Surg. 19: 42-7.
Naoman UT. 2021. Causes and treatment of feline dystocia. J Appl Vet Sci. 6: 28-31.
Naomi C, Gorda IW, Warditha AAGJ. 2019. Case report: cutaneous haemangioma in local Balinese dog. Indones Medicus Veterinus 8: 131-43.
Niga MIB, Suptijah P, Trilaksani W. 2022. Isolasi dan karakterisasi ekstrak tepung ikan gabus dam potensinya sebagai imunomodulator. Jurnal Pengolahan Hasil Perikanan Indones. 25: 52-66.
Niyas E, Vidya VK, Athira, KS, Anjaly S, Amritha A, Abhilash RS, Reshma S. 2023. Surgical intervention for management of dystocia in a Persian cat due to partial primary uterine inertia. Pharm Innov J. Vol. 12: 658-60.
Nopitasari BL. 2022. Studi penggunaan obat pada pasien osteoarthritis usia lanjut di Instalasi Rawat Jalan Rumah Sakit Umum Daerah Provinsi NTB periode 2019. LUMBUNG FARMASI: Jurnal Ilmu Kefarmasian 3: 246-53.
Moura LMS, Rodrigues NM, Rodrigues MC, Quessada AM. 2023. Reproductive emergencies in female cats. Campo Grande 28: 59-71.
Pratiwi KN, Yuwindry I, Manto OAD. 2020. Studi farmakovigilans efek samping multivitamin di masyarakat Palangka Raya. J Pharm Care Sci. 1: 28-35.
Prudenta O, Mardasella A, Sahmiranda D, Ardianto Y, Aeka A. 2021. Chronic kidney disease in domestic shorthair cat. Media Kedokteran Hewan 32: 29-39.
Rahmiati DU, Wira DW. 2019. Induksi anestesi menggunakan Ket-A-Xyl ® pada kucing domestik. ARSHI Veterinary Letters 3: 53-4.
Ramadhayani AN, Lusiana V. 2022. Klasifikasi jenis kucing menggunakkan algoritma principal component analysis dan K-nearest neighbor. J Informasi dan Komputer 201: 257-63.
Wardhani MK, Sudarwati, Aryati I, Mukarromah S. 2021. Keputusan pembelian ulang ditinjau dari citra merek, media iklan, dan brand trust pada produk Imboost di Surakarta. J Ilmiah Edunomuka 5: 224-34.

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