

Severe Vulvar Myiasis Case In A Crossbreed Limousin Cow

Kasus Miasis Vulva Pada Sapi Peranakan Limousin

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ABSTRACT

Background: Myiasis is caused by the infestation of Diptera fly larvae in vertebrate animals. In cases of myiasis, larvae will eat living or dead tissue, thereby expanding the infestation and infection of the host. Myiasis is a significant economic problem due to decreased productivity and tissue damage. **Purpose:** This study seeks to provide insights regarding managing and treating myiasis cases in cattle. **Cases(s):** The 4-year-old female Limousin cow was in the gestation period and kept in Buluagung Village, Pesanggaran, Banyuwangi. Based on the owner's statement, the cow experienced a decrease in appetite, and there were wounds in the vulva area accompanied by larvae, which had been present for five days. The clinical findings revealed an open wound that was red in color and soft in consistency, and there was an unpleasant odor in the vulva area. An infestation of Diptera fly larvae accompanied this. After the initial extraction of maggots, necrotic tissue, edema, friable tissue, and erythema were evident in the vulvar region and introitus. **Case Management:** Treatment carried out on the case cow involved cleaning the wound using 0.9% NaCl and removing both necrotic tissue and any larvae from the vulva wound using tweezers. The cow received an intramuscular injection of an analgesic and antipyretic (Sulprodon®) 7 mL, antihistamine (Prodryl®) 3 mL intramuscular injection, antibiotic (Limoxin-LA®) 10 mL, and multivitamin (Injectamin®) 7 mL. **Conclusion:** The vulvar myiasis in this cow was successfully cured with no more larvae found, and the wound dried out.

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ABSTRAK

Latar Belakang: Myiasis merupakan kondisi adanya infestasi oleh larva lalat Diptera pada hewan vertebrata. Larva lalat diptera yang muncul pada kasus Myiasis akan memakan jaringan hidup maupun mati, sehingga hal tersebut akan menyebabkan terjadinya perluasan infestasi larva dan infeksi pada hospes. Myiasis menjadi suatu masalah yang mengakibatkan kerugian ekonomi yang cukup besar dikarenakan akan terjadi penurunan produktivitas dan kerusakan jaringan pada tubuh ternak yang disebabkan oleh larva lalat. **Tujuan:** Memberikan wawasan terkait penanganan dan pengobatan kasus myiasis pada sapi. **Kasus:** Sapi Limousin betina berumur 4 tahun, sedang bunting 2 bulan dan dipelihara di Desa Buluagung, Pesanggaran, Banyuwangi. Berdasarkan keterangan pemilik, sapi mengalami penurunan nafsu makan, terdapat luka pada daerah vulva disertai larva, dan telah berlangsung selama 5 hari. Temuan klinis menunjukkan terdapat luka terbuka yang berwarna kemerahan, dengan konsistensi lunak, dan berbau tidak sedap yang disertai dengan infestasi larva lalat pada daerah vulva. Setelah dilakukan ekstraksi larva, didapati adanya jaringan nekrosis, edema, jaringan yang rapuh, dan kemerahan. **Penatalaksanaan Kasus:** Penanganan yang dilakukan pada sapi kasus dengan membersihkan luka menggunakan NaCl 0,9%, juga pengambilan jaringan nekrosis dan larva pada luka vulva menggunakan pinset. Memberikan injeksi secara Intramuscular analgesik dan antipiretik (Sulprodon®) 7 mL, antihistamin (Prodryl®) 3 mL secara Intramuscular, antibiotik (Limoxin-LA®) 10 mL, dan multivitamin (Injectamin®) 7 mL secara Intramuscular. Terakhir disemprotkan Gusonex® yang mengandung dichlofention 1% pada luka vulva sebagai repellent. **Kesimpulan:** Sapi sudah dinyatakan sembuh dengan keadaan luka yang sudah mengering dan tidak dijumpai adanya larva lagi.

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INTRODUCTION

Myiasis is derived from the Greek word 'Myia,' which means fly. This means that myiasis is an infestation of vertebrates by Dipteran fly larvae. In cases of myiasis, the larvae feed on living or dead tissue, spreading the infestation and infection to the host. Myiasis in both livestock and pets is a problem that causes significant economic losses due to reduced productivity and tissue damage (Azrolharith et al., 2022). Myiasis is generally classified according to the degree of dependence of the fly on the host. The classifications include accidental, facultative, and obligatory. For example, accidental myiasis can occur when fly eggs or larvae contaminate food that is then ingested by animals, as in the case of fruit flies (*Drosophila spp.*). Facultative myiasis is caused by flies that feed on dead and decaying tissue rather than invading healthy tissue, but they can move from dead to living tissue and back again e.g. *Calliphora*, *Lucilia*, *Phormia*, *Chrysomya*, *Musca domestica*, *Sarcophaga*, etc. They are parasites that can attack diseased or injured hosts and continue their larval development after the host dies. Adult flies are attracted to open or chronic superficial wounds with purulent exudates. Obligate myiasis is caused by flies that require a live host for development e.g. *Oestrus ovis*, *Hypoderma spp.*, *Gasterophilus spp.* etc. Myiasis is also classified according to the site of infection in the host, including gastrointestinal, urogenital, ocular, nasopharyngeal, optic, and cutaneous myiasis (Mullen and Durden, 2019).

The incidence of myiasis in livestock is high throughout the year. The Old World Screwworm (OWS) fly - *Chrysomya bezziana* was found to be the most common fly species in livestock myiasis cases, with the larvae of this fly found in 94.2% of animal wounds. Two other species, *M. domestica*, and *S. ruficornis*, were also found infesting wounds in 3.8% and 1.9% of vertebrates, respectively. Screw worm flies, particularly *Cochliomyia hominivorax* and *Chrysomya bezziana*, are major contributors to myiasis in tropical regions. Their high prevalence is due to the warm, humid climates that support their life cycles. Poor wound management, high livestock density, and limited veterinary care worsen the situation, leading to rapid infestations. Severe myiasis results from their attraction to the tiny wounds frequently caused by ticks. The life cycle of these flies is temperature-dependent, with optimal development around 27.5°C, making them a significant challenge in a tropical area (Gutierrez et al., 2019; Pazi et al., 2019). The overall infestation rate was found to be the highest in summer, followed by spring and autumn, and the lowest was seen in winter. The most commonly infested body parts were cracked horns, the perianal region, the base of the tail and neck in males, and vulval lips, hooves, and also neck in females. Neglected open wounds, fecal contamination, posterior paralysis, and farmers' ignorance were the main predisposing factors for the onset of myiasis in cattle (Singh and Singh, 2016). Therefore, the primary objective of this case report aims to describe how bovine vulvar myiasis is diagnosed and treated.

CASE

Sinyalemen and Anamnesa

The case animal was a 4-year-old female of the Limousin cattle breed (Figure 1). The owner reported to the local veterinarian on February 27, 2023 that the cow had had a decreased appetite for about five days, and that a wound had been found on the vulva. There had been no previous knowledge of whether the cow had a vulvar injury. According to the owner, the cow was two months pregnant.

Physical Examination and Clinical Findings

Physical examination included inspection and palpation. Rectal body temperature measurements were also taken. The results of the physical examination are shown in Table 1. The clinical findings were that the cattle had a decreased appetite. There was also an open wound of a red color, with a soft consistency, and a foul odor in the vulva area accompanied by fly larvae infestation (Figure 2). There were numerous *M. domestica* flies around the cows and pens.



Figure 1. Limousin cattle of the case (Personal documentation, 2023).

Table 1. Physical Examination Results for the Case Cattle.

Parameters	Result	Normal Standard	Description
Standing position	Upright	Upright	Normal
Nose	Moist	Moist	Normal
Body temperature	40°C	38,2°C – 39,1°C	Increased
Vulva	Wound with larvae	No unusual wounds, swelling or weeping	Maggoted wound

Management and Treatment

Treatment of this case of myiasis consisted of wound cleansing with 0.9% saline and the removal of the dead tissue and larvae found in the vulval wound with tweezers. Intramuscular injections of Sulprodon®, Prodryl®, Limoxin LA®, and Injectamin® were then administered. Finally, Gusanex® was sprayed on the vulval wound. Details of the treatment of the case cow are given in Table 2. As there aren't any visible larvae at present, it appears that the cow has totally recovered from her myiasis treatment (Figure 3).



Figure 2. Wounds with fly larvae on the Limousin’s vulva (A); Dead tissue removed from vulva with larvae (B); Condition of vulva after the removal of dead tissue (C); *Musca domestica* flies found in a barn and around the cow’s body (D).

Table 2. Treatment Given to The Cow of The Case.

Drugs	Function	Content	Dose
Sulprodon®	Analgesic, antipyretic, antispasmodic	Dipyrone and Lidocaine	10 ml / 200 kg, IM
Prodryl®	Antihistamine	Diphenhydramine HCl	2.5 ml / 100 kg, IM
Limoxin LA®	Antibiotic	Oxytetracycline	1 ml / 10 kg, IM
Injectamin®	Multivitamin	Vitamin A, Vitamin D3, Vitamin E, Vitamin B2, Vitamin B6, Vitamin B12, Nicotinamide, D-panthenol	2.5 ml/100 kg, IM
Gusanex®	Insecticide	Dichlofenthion 1%	Topical

DISCUSSION

Based on the results of the physical examination, it was found that the cow had an elevated body temperature of 40°C. The diagnosis in this case was myiasis based on the physical examination mentioned in the above section. The usual supporting examination in cases of myiasis is larval identification. However, for confirmatory purposes, the larval identification was performed using a stereo microscope to observe the spine’s anterior and posterior spiracles on the larvae (Pudjiatmoko et al., 2014). Based on the location of occurrence, the myiasis, in this case, belongs to urogenital cutaneous myiasis.

Urogenital myiasis in female animals is an invasion of fly larvae that occurs in the clitoris, vulva, urethra, vagina, and uterus (Francesconi and Lupi, 2012). Furthermore, this occurs when the host is weak and the genitourinary tract is open, or when the host produces genitourinary exudates that attract flies (Mullen and Durden, 2019). Flies are initially attracted to open wounds, foul-smelling fluids, or wounds as small as a flea bite. The course of myiasis begins with the female fly laying her egg clutch on the host in the late afternoon or early evening. The eggs then hatch into L1, and

within 12 - 24 hours, or 10 hours at 30°C, the L1 migrate to the moist wound area. A day later, L1 will transform into L2 and begin to tunnel deeper into the wound area by burrowing into the host tissue. L2 then develops into L3 and, on the fourth day, they migrate out of the wound area and fall to the ground (Pudjiatmoko et al., 2014).

Some of the factors that predispose to the occurrence of myiasis include summer or transitional periods, keeping animals with myiasis, low levels of environmental hygiene and sanitation, a lack of attention to wound care, the introduction of new livestock to areas where myiasis is prevalent, and the ignorance of the farming community (Pudjiatmoko et al., 2014; Singh and Singh, 2016). Based on this case, the incidence of myiasis may have occurred due to farmer ignorance. This is because the cattle are kept in cages where the farmer rarely has access to the back. The farmer only comes to feed the cattle, which is placed at the front of the head, so the farmer rarely checks the back of the cattle. As a result, myiasis was detected and treated late in this case.

As no identification of the larvae was done, it was not possible to determine which species of fly the larvae belonged to. During the examination in the barn, there were many *M. domestica* flies around the cattle. According to Katoch et al., (2014), the primary fly species causing myiasis in tropical countries such as Indonesia is *Chrysomya bezziana*, which is an obligate parasite of warm-blooded animals. When the wound and tissue damage caused by the primary fly worsens, it causes a pungent odor that will invite secondary flies, such as *Sarcophaga sp.* and *M. domestica*, to infect. It seems that in the case of cattle, the infection was caused by secondary flies because there were many *M. domestica* flies found in the vicinity (Pudjiatmoko et al., 2014).

The treatment of bovine myiasis in the field was done by IM injection of Sulprodon®, Prodryl®, Limoxin LA® IM, and Injectamin®. Typically, ivermectin is also injected as an antiparasitic in cases of bovine myiasis. However, in this case, ivermectin was not administered because the cow was pregnant (Yanuartono et al., 2019). According to Gaballh et al., (2017), the administration of ivermectin to pregnant animals can cause abortion and histologically cause congestion, endometrial edema, and necrosis of mature follicles.

Sulprodon® is a drug that functions as an analgesic, antipyretic, and antispasmodic. The drug contains Dipyrone and Lidocaine. Dipyrone, a class of NSAIDs often used in livestock, has a mode of action that directly attacks the central nervous system to inhibit the pain initiated by prostaglandins (Fux et al., 2022). Because it can relieve pain, Dipyrone is classified as an analgesic drug; besides that, it can also be an antipyretic because it can reduce fever (Indrajulianto et al., 2022). Lidocaine itself is a drug that acts as a local anesthetic. This drug inhibits pain by closing sodium access during the transmission process (Endarto et al., 2019).

Prodryl® is an antihistamine that contains Diphenhydramine HCl. The use of Diphenhydramine HCl is to overcome the

effects of excess histamine released in inflammation (Fahma et al., 2020). Limoxin LA[®] is a drug containing the antibiotic Oxytetracycline with long-acting action. The administration of Oxytetracycline serves to treat secondary infections caused by bacteria. Oxytetracycline is a tetracycline derivative compound included in the aminoglycoside class of antibiotics used to treat infections caused by Gram positive and Gram negative bacteria by inhibiting protein synthesis in said bacteria by interfering with the function of the 30s ribosomal subunit. The administration of antibiotics, including Oxytetracycline, must consider the amount and time of administration so as not to cause bacterial resistance to antibiotics (Fahma et al., 2020). Injectamin[®] is a multivitamin that contains Vitamin A, Vitamin D₃, Vitamin E, Vitamin B₂, Vitamin B₆, Vitamin B₁₂, Nicotinamide, and D-panthenol. Vitamin administration is a supportive therapy that increases the patient's immune system so then the recovery process can be maximized (Wirjaatmadja et al., 2021). The cleaned vulva area was sprayed with Gusanex[®], which contains 1% Dichlofenthion. Dichlofenthion, a 1% spray, aims to act as a larvicidal and repellent for flies (Fahma et al., 2020).

In addition to the treatment injection, the larvae in the vulval lesions were also removed using tweezers. Myiasis generally has a fatal prognosis if untreated. However, if proper handling is carried out, such as proper wound care management and good fly control (Yanuartono et al., 2019), recovery is possible. The cow was declared cured based on the condition of the wound as having dried up, and no more larvae being found (Fahma et al., 2020).

Disease prevention can be done by providing counseling to farmers so then they pay close attention to the sanitation of their livestock, pens, and the surrounding environment, as well as monitoring livestock traffic between regions. Cage sanitation can also be considered by applying disinfectants. Disinfectants are chemicals used to inhibit or kill microorganisms (for example, bacteria, viruses, and fungi) on the surface of inanimate objects, such as rooms, floors, and others (Hilmi et al., 2019). An insecticide commonly used to clean cages by farmers contains the active substance Deltamethrin, which is a synthetic chemical compound that serves to kill and control ectoparasites in cages and the environment in animals caused by flies, fleas, lice, mites, ticks etc. (Indarwati et al., 2023). In addition, there is also the Benzaklin disinfectant, which has a high level of effectiveness in killing microbes that often contaminate cages (Nuraini et al., 2020).

Another measure to support the prevention of myiasis is the control of the flies that cause it. Various forms of control have been developed, including the use of insecticides or pesticides, essential oils, and recombinant vaccines. There are also mechanical methods of fly control, such as the use of yellow traps, shaking fly traps, and glue stick traps. Fly control can also be biological, using the natural enemies of flies such as other parasites, pathogenic bacteria, and predators (Purwanto and Porusia, 2023; Ramanindisari and Porusia, 2022; Yanuartono et al., 2019).

CONCLUSION

Treatment for this case of myiasis consisted of wound cleansing with 0.9% saline and removing all dead tissue and larvae found in the vulval wound with tweezers. Treatment consisted of an IM injection of Sulprodon[®] as an anti-inflammatory and antipyretic, Prodryl[®] as an antihistamine, Limoxin LA[®] as an antibiotic, and Injectamin[®] as a multivitamin supportive therapy. Finally, Gusanex[®] containing 1% dichlofenthion was sprayed on the vulval wound as an anti-fly treatment. The cow was declared cured as the wound had dried up, and no larvae were found.

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CONFLICT OF INTEREST

The authors declare there to be no conflict of interest.

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ETHICAL PPROVAL

This case study have received an ethical approval from Animal Care and Use Comitee of Ethical Reseach Comitee of Brawijaya University with a register number [097-KEP-UB-2024].

AUTHOR'S CONTRIBUTION

ASPU recorded the data, documented the case, and wrote the article. SKR, RY, and AEPH guided and revised the article writing. TM handled and treated the animal case and guided them during the implementation of the activity.

REFERENCES

- Azrolharith, M.R., Fitri, W.N., Jesse, F.F.A., Eric, L.T.C., Azmi, M.M., Annas, S., Zulfakhrudin, Z., Azrul, H., Aznida, C.A., Wahid, H. and Baiee, F.H., 2022. Clinical Management of a Severe Traumatic Cutaneous Myiasis At The Base of The Antler in A Fallow Deer, Dama Dama: A Case Report. *Iraqi Journal of Veterinary Sciences*, 36(1), 187-190.
- Endarto, O., Sitanggang, R.H. and Rismawan, B., 2019. Perbandingan Tramadol dengan Lidokain untuk Mengurangi Derajat Nyeri Penyuntikan Propofol. *Jurnal Anestesi Perioperatif*, 7(2), 109-115.
- Fahma, N.N., Suhiryanto., Soedarmanto, I., Yanuartomo., Nururrozi, A., Purnamaningsih, H. and Raharjo, S., 2020. Diagnosis dan Terapi Myiasis pada Kambing. *Journal of Applied Veterinary Science and Technology*, 1(12), 29-23.

- Francesconi, F., and Lupi, O., 2012. Myiasis. *Clinical Microbiology Reviews*, 25(1), 79-105.
- Fux, D., Metzner, M., Brandi, J., Feist, M., Wipperman, M.B., Thaden, A.V., and Baumgartner, C., 2022. Pharmacokinetics of Metamizole (Dipyrone) as an Add-on in Calves Undergoing Umbilical Surgery. *PLOS ONE*, 17(3), 1-15
- Gaballh, M.S., El-mashad, A.B.E., Amin, A.A., and Darweish, M.M., 2017. Pathological Studies on Effects Of Ivermectin on Male and Female Rabbits. *Benha Veterinary Medical Journal*, 32(1), 104-112.
- Gutierrez, A.P., Ponti, L., and Arias, P.A., 2019. Deconstructing The Eradication of New World Screwworm in North America: Retrospective Analysis and Climate Warming Effects. *Medical and Veterinary Entomology*, 33(4), 310-324.
- Hilmi, E., Sari, L.K., and Amron, A., 2019. Distribusi Sebaran Mangrove dan Faktor Lingkungan Melalui Ekosistem Mangrove Segara Anakan Cilacap. In *Prosiding of Jurnal Bioterdidik, Vol. 9 No. 3, Desember 2021 (215) Seminar Nasional dan Call for Papers "Perkembangan Sumber Daya Perdesaan dan Kearifan Lokal Yang Berkelanjutan IX"*. Universitas Jendral Soedirman.
- Indrajulianto, S., Nururrozi, A., Yanuartono and Winarsih, S., 2022. Laporan Kasus: Keberhasilan Penanganan White Scours Diarrhea pada Sapi Pedet Hasil Persilangan Simmental dengan Peranakan Ongole. *Indonesia Medicus Veterinus*, 11(2), 282-291.
- Indarwati, T.L., Patria, C.A., Syahputra, S.K. and Shaffira, M.R., 2023. Penerapan Sanitasi Kandang Sapi Potong Di Pt. Indo Prima Beef I Kecamatan Terbanggi Besar, Lampung Tengah. *Jurnal Agribisnis Peternakan*, 1(1), 22-26.
- Katoch, R., Godara, R., Yadav, A., Sharma, S., and Ahmad, I., 2014. Occurrence of *Chrysomya bezziana* in a Buffalo in Jammu. *Journal of Parasitic Disease*, 38(4), 420-422.
- Mullen, G.R. and Durden, L.A., 2019. Chapter 19 Myiasis (Muscoidea, Oestroidea). In: *Medical And Veterinary Entomology Third Edition*. United State : Elsevier, 383 – 417.
- Nuraini, D.M., Sunarto, S., Widias, N., Pramono, A. and Prastowo, S., 2020. Peningkatan Kapasitas Tata Laksana Kesehatan Ternak Sapi Potong di Pelemrejo, Andong, Boyolali. *PRIMA: Journal Of Community Empowering and Services*, 4(2), 102-108.
- Pezzi, M., Bonacci, T., and Leis, M., 2019. Myiasis in Domestic Cats: a global review. *Parasites & Vectors*, 12, 372.
- Pudjiatmoko., Syibli, M., Nurtanto, S., Lubis, N., Syafrison., Yulianti, Kartika, D., Yohana, C.K., Setianingsih, E., Nurhidayah., Efendi, D., and Saudah, E., 2014. *Manual Penyakit Hewan Mamalia*. Jakarta : Direktorat Jenderal Peternakan dan Kesehatan Hewan. 418-427.
- Purwanto, F.R., and Porusia, M., 2023. Pengendalian Lalat Melalui Metode Mekanik Di Pasar Harjodaksino Surakarta. *Prepotif: Jurnal Kesehatan Masyarakat*, 7(3), 16654-16562.
- Ramanindisari, E.J., and Porusia, M., 2022. Kajian Literatur Pengendalian Biologi Terhadap Lalat Rumah (*Musca Domestica*). *Jurnal Ilmu Kesehatan Masyarakat Berkala*, 4(2), 24-37.
- Singh, A., and Singh, D., 2016. A Study on The Incidence of Myiasis Among Dairy Animals in The state of Punjab, India. *Journal of Agriculture and Veterinary Science*, 9(1), 30-34.
- Wirjaatmadja, R., Palgunadi, B.U. Prasetyo, A., Pratama, J.W.A., Yoppy, A. and Wardhani, L.D.K., 2021. Pemeriksaan Kebuntingan Sapi Potong dan Pelayanan Kesehatan Hewan di Desa Mategal Kecamatan Parang Kabupaten Magetan. *Jurnal Pengabdian pada Masyarakat*, 3(1), 35-43.
- Yanuartono, Indrajulianto S., Nururrozi, A., and Purnamaningsih, H., 2019. Myiasis pada Ruminansia: Diagnosis, Manajemen Terapi dan Pencegahan. *Jurnal Ilmu Peternakan dan Veteriner Tropis*, 9(2), 67-73.