

Handling *Bovine Ephemeral Fever* (BEF) in Semanu District, Gunung Kidul Regency, Yogyakarta, Indonesia

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ABSTRACT: *Bovine Ephemeral Fever* (BEF) is one of the most common diseases affecting cattle caused by single-stranded RNA (ssRNA) viruses *sense* negative, belongs to the family *Rhabdoviridae* and genus *Ephemerovirus* which are transmitted through vectors such as *Culicoids* spp. BEF has a high morbidity rate and low mortality of around 2-5%. The cow belonging to Mr. Sayadi whose address is Nitikan Timur, Semanu, Gunung Kidul, Yogyakarta, a 3 year old male Limousin type with a body weight of 400 kg and a BCS of 3/5, experienced decreased appetite, hypersalivation, weakness and the results of the physical examination showed a high body temperature, namely 39.5°C, respiratory frequency 40x/minute, pulse frequency 60x/minute. Based on the results of the anamnesis, physical examination and clinical symptoms, the cow was diagnosed *Bovine Ephemeral Fever* (BEF) with fausta prognosis. The therapy given is an injection of the antihistamine Vetadryl®¹ to overcome inflammation and Vitamin B Sanplex®² as intramuscular supportive therapy. **Published Online: June 05, 2024**

KEYWORDS: *Bovine Ephemeral Fever* (BEF), *Culicoids* spp, Limousin Cattle

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INTRODUCTION

Gunung Kidul Regency, which is known as the 'Livestock Warehouse' because of its cattle population of 153,000. Apart from that, it is also the largest supplier of beef cattle in the Yogyakarta area. The long-standing culture of livestock farming, and the large area of the area, make Gunung Kidul suitable for livestock farming, even though it faces limited providers of green fodder. Based on field conditions in Gunung Kidul, it is suitable for the development and breeding of beef cattle.

One of the diseases often found in cattle is *Bovine Ephemeral Fever* (BEF) or what is commonly known as three-day fever. This disease is caused by a virus which is transmitted through vectors such as mosquitoes *Culicoids* spp, *Culex anulirostris*, *Anopheline* and *Culicine* through the wind (Kirkland, 2016). Symptoms that often appear in cattle experiencing BEF are decreased appetite, fever, hypersalivation, hyperlacrimation and even lameness in the extremities. The high morbidity and low mortality rates indicate that BEF is not dangerous, but if not treated immediately it can become serious. Cows infected with BEF cannot infect other cows either through direct contact, urine, feces, meat or milk. Cows that have a good immune system will be able to eliminate the disease themselves (*self limit*). Farmers can supply the nutritional needs of cows by ensuring adequate nutrition and quantity of feed and drink *optional*, giving premix if necessary, routine deworming and vaccines so that it will improve the livestock's immune system.

This case report aims to find out and get to know BEF cases by examining one case of BEF in Gunung Kidul in a cow belonging to Mr. Sayadi whose address is in Semanu District, as well as the therapy provided by the veterinarian at UPT Puskesmas Semanu.

It is hoped that this report can increase and broaden knowledge for the public and breeders in dealing with disease *Bovine Ephemeral Fever* (BEF) in cattle.

CASE HISTORY

Signals and Anamnesis

The 3-year-old Limousin bull belonging to Mr. Sayadi whose address is East Nitikan, Semanu District, Gunung Kidul Regency, Special Region of Yogyakarta was reported to have experienced a decrease in appetite for two days, hypersalivation, and a decrease in activity level on October 2 2023. The cow was previously given forage. in the form of kalanjono grass and concentrate in the form of bran.



Figure 1. Mr. Sayadi's male Limousin cow

Clinical Examination

Physical examination is carried out by inspection, palpation and auscultation. The results of examinations on cows can be seen in Table 1.

Table 1. Examination results

Parameter	Examination result
General condition	Facial expression: weak, lethargic. KT: 3/5
Respiratory frequency	40 x/minute
Pulsus frequency	60 x/minute
Temperature	39.5°C
Skin and hair	Clean, shiny, no ectoparasites
Mucous membranes	Wet nasal mirror, pale pink gingival conjunctiva
Lymph nodes	No swelling
Respiration	Thoracoabdominal type of respiration
Blood circulation	CRT < 2 seconds
Digestion	Decreased appetite, hypersalivation
Genitals and urination	Urination is smooth, anus is clean
Saraf	Responsive
Limbs	No changes
Diagnosis	BEF
Prognosis	Fausta
	Inj./ Vetadryl cc 10 s.i.m.m. i.m.
	Inj./ Vit B-Sanplex cc 10 s.i.m.m. i.m.

Diagnosis and Prognosis

Diagnosis is based on anamnesis, clinical symptoms and physical examination of the cow. Laboratory examinations were not carried out due to time constraints. Based on the anamnesis, clinical symptoms, and physical examination results which showed the cow had hypersalivation, fever, decreased appetite, the cow was diagnosed *suspect Bovine Ephemeral Fever* (BEF) with fausta prognosis.

Therapy

The therapy carried out by the Semanu Health Center veterinarian was given an injection of the antihistamine Vetadryl® to treat inflammation and vitamin B-Sanplex® as a supportive therapy intramuscularly as attached in Table 2. The administration of therapy is

- Inj/ Vetadryl cc 10 s.i.m.m i.m
- Inj/ Vit B -Sanplex CC 10 s.i.m.m i.m

Table 2. Giving Pak Sayadi cow therapy

Drug	Content	Factory Dosage	Dosege Given	Dosage Appropriateness
Vetadryl®	Diphenhydramine HCL 20 mg	1,25-2,50 ml/100kg BW	10 ml	Appropriate dose
Vitamin B Sanplex®	Vitamin B1 2,5 mg Vitamin B2 1,6 mg Vitamin B6 1.25 mg Nicotinamide 12,5 mg D-Panthenol 2.5 mg Auxiliary Ingredients 1 ml	2.5-5 ml/100 kg BW	10 ml	Appropriate dose

RESULTS AND DISCUSSION

Based on the results of the examination, data on respiratory frequency was 40x/minute, pulse frequency was 60x/minute, and body temperature was 39.5°C. According to the literature Abdisa et al. (2017) normal respiratory frequency, pulsus frequency, and body temperature in cattle are 20 – 42 x/minute, 54 – 84 x/minute, and 37.6 – 39.2°C. So Mr. Sayadi's cow experienced an increase in body temperature or fever. Cows also look weak, lethargic. On examination of the mucous membranes, the nasal mirror is wet, the gingival conjunctiva is pale pink. This is included in the normal category according to the literature of Abdisa et al. (2017) that normal cows have nasal mirrors that are moist to wet. Examination of the digestive system in cows was carried out by giving food, but the cow did not respond, the cow experienced hypersalivation in the mouth. Cows do not experience problems with genital and urinary examinations, urination and defecation only decrease in frequency, this can occur due to a lack of feed consumed. On examination, the nerves and limbs still showed a response and no changes occurred.

Based on the results of the anamnesis and examination, Mr. Sayadi's cow experienced *Bovine Ephemeral Fever* (BEF). The clinical symptoms of cows suffering from BEF are fever, decreased appetite, hypersalivation, discharge from the nose and eyes, a sudden decrease in milk production, lameness that is usually seen on the second day, shivering, and muscle stiffness (Ting et al. 2016; Kirkland, 2016). BEF disease is caused by a single-stranded RNA (ssRNA) virussense-genus negative *Ephemerovirus* who belongs to the family *Rhabdoviridae* (Barigye et al. 2016). BEF disease is often also called 'three days sickness' (Kirkland, 2016). According to Nururrozi et al. (2017) loss of appetite and drinking likely caused by hyperthermia occurs in the body which interferes with the livestock's appetite and drinking. Kirkland (2016) stated that on several occasions it was also reported that there was swelling in the esophagus which made it uncomfortable for cows to eat because they had difficulty swallowing. Viruses can also interfere with the nervous system in controlling swallowing, so that it can affect the entry of food. This can also be associated with symptoms of hypersalivation as a response to disorders of the upper digestive tract. Increases the cow's body temperature in response to the resistance of the infecting virus and causes clear to serous nasal discharge (Walker, 2014). BEF disease is transmitted through vectors such as mosquitoes *Culicoides spp.*, *Culex annulirostris*, *Anopheline* and *Culicine* through the wind (Kirkland, 2016). Cows infected with BEF cannot infect other cows either through direct contact, urine, feces, meat or milk. Transmission through direct contact or vomiting has never been reported before (Walker, 2014). The results of research and observations show that there is evidence that the increased risk of spreading BEF virus between continents can be through animal transportation or vector translocation (He et al.2016). The clinical symptoms of BEF which are relatively mild and with a high recovery rate can lead to inaccurate diagnosis because the symptoms that arise may be due to the initial infection of a disease. To confirm the diagnosis,

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serological examination can be carried out using ELISA and PCR. In this case, due to time and cost limitations and considering the economic value, the local veterinarian did not carry out laboratory examinations.

The therapy given to Pak Sayadi's cows is symptomatic and supportive therapy. Symptomatic therapy is given by Vetadryl® injection of 10 ml and supportive therapy is given by Vitamin B-Sanplex® 10 ml intramuscularly. Vetadryl® contains *diphenhydramine* 2% HCl as an antihistamine which functions to inhibit histamine on histamine-1 (H1) receptors in the peripheral and central nervous system (receptors are also located on effector cells such as the stomach, uterus and large blood vessels), thereby reducing symptoms of hypersensitivity (Plumb, 2011). To calculate the volume of Vetadryl® drug administration according to the dosage, it is as follows:

Lowest injection volume= Lowest dose x BB
= (1,25 ml/100kg) x 400kg
= 5 ml

Highest injection volume= Highest dose x BB
= (2,5 ml/100kg) x 400kg
= 10 ml

The dose of Vetadryl® given in the field is 10 ml, whereas the volume calculated according to the Indonesian Veterinary Drug Index (2005) is between 5 ml and 10 ml. From the calculations above, it can be concluded that the volume of drug administration is still within appropriate limits. To calculate the volume of Vitamin B administered Sanplex® according to the dosage is as follows:

Lowest injection volume= Lowest dose x BB
= (2,5 ml/100kg) x 400kg
= 10 ml

Highest injection volume= Highest dose x BB
= (5 ml/100kg) x 400kg
= 20 ml

The dose of Vitamin B-Sanplex® given in the field is 10 ml, whereas the volume calculated according to the Indonesian Veterinary Drug Index (2005) is between 10 ml and 20 ml. From the calculations above, it can be concluded that the volume of drug administration is still within appropriate limits. According to Nururrozi *et al* (2017) the combination of BEF therapy with antihistamines and vitamins is sufficient to provide a good recovery rate.

The ingredients in Vetadryl® are produced by PT Sanbe Farm, every 1 ml contains 20 mg diphenhydramine HCl. B-Sanplex® is produced by PT. Sanbe Farma, every 1 ml contains Vitamin B1 2.5 mg, Vitamin B2 2.0 mg, Vitamin B6 2.5 mg, Vitamin B12 1.0 mg, Nicotinamide 2 mg, d-panthanol 10.0 mg.

CONCLUSION

Based on the anamnesis and physical examination, Mr. Sayadi's Limousin cow whose address is East Nitikan, Semanu District, Gunung Kidul Regency was diagnosed with *Bovine Ephemeral Fever* (BEF) with fausta prognosis. Treatment includes 10 ml of the antihistamine Vetadryl® and 10 ml of Vitamin B-Sanplex®, both of which are injected intramuscularly, but antipyretics can also be given to reduce fever. Advice that can be given to breeders is to pay attention to maintenance management, cage and livestock care to minimize vectors that cause disease *Bovine Ephemeral Fever* (BEF) and immediately report to local animal health personnel if livestock are found showing clinical symptoms of disease *Bovine Ephemeral Fever* (BEF) in the area.

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