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Clinical Mastitis in Friesian Holstein (FH) Dairy Cows at Balai Besar Pembibitan Ternak Unggul dan Hijauan Pakan Ternak (BBPTUH-HHPT), Baturraden, Central Java

AFIFAH UMNIAH J¹

Universitas Hasanuddin, Makassar, South Sulawesi

E-mail : afifahumniah@gmail.com

ABSTRACT. Mastitis is an inflammation of the mammary gland caused by infection with pathogenic microorganisms such as *Staphylococcus aureus*, *Streptococcus agalactiae*, *coagulase-negative staphylococci*, *Streptococcus dysgalactiae*, *Streptococcus uberis*, and *Eschericia coli*. The purpose of this case study is to find out how to diagnose and treat mastitis. According to the results of the case report that occurred at Balai Besar Pembibitan Ternak Unggul dan Hijauan Pakan Ternak (BBPTUH-HPT) Baturraden, precisely at Farm Limpakuwus, Sumbang Subdistrict, Banyumas District, Central Java, on December 1, 2022, the cow showed clinical signs of udder asymmetry, pain on palpation, udder redness, and other inflammatory signs. The California Mastitis Test (CMT) on milk confirmed positive results, characterized by thickening to form a gel in the milk sample. In conclusion, FH dairy cows at BBPTUH-HPT Baturraden were diagnosed with clinical mastitis based on anamnesis, clinical signs, clinical examination, and further examination in the form of a CMT examination. The treatment given was the administration of *Terrexine* LC® antibiotics containing *Cephalexin* 200 mg and *Kanamycin* 100,000 IU.

Keywords : Friesian Holstein, Mastitis, California Mastitis Test, Baturraden

I. INTRODUCTION

Friesian Holstein (FH) cattle originated in a temperate climate with four seasons: winter, summer, autumn, and spring in the provinces of West Friesland and North Holland. Friesian Holstein cows are able to produce large amounts of milk with a lower fat content than other dairy cattle breeds. Friesian Holstein can produce 6000–8000 kg/head/lactation of milk in their native country. Generally, dairy cows are calm, docile, and adaptable. In Indonesia, Friesian Holstein are mostly kept by companies and small farms (Ratnasari et al., 2019).

Animal health is one of the most important issues and can pose a threat to dairy farmers. The threat of disease that often attacks dairy cows during lactation is mastitis, which then affects economic factors (Nisa et al., 2019). Mastitis causes economic losses because it affects the production and quality of milkers. The threat of disease that often attacks dairy cows during lactation is mastitis, which then affects economic factors (Nisa et al., 2019). Mastitis causes

economic losses because it affects the production and quality of milk. Mastitis can be divided into three categories: clinical, subclinical, and chronic (Cheng and Han, 2020).

Organisms causing intramammary mastitis infections are mostly caused by *Staphylococcus aureus*, *Streptococcus agalactiae*, *coagulase-negative staphylococci*, *Streptococcus dysgalactiae*, *Streptococcus uberis*, and *Eschericia coli* (Roger and Peter, 2010). Bacteria can enter and form colonies through the teat canal route. Microorganisms that enter the mammary gland will trigger an inflammatory reaction, which then causes an increase in white blood cells in the mammary gland and milk production (Prasetyo et al., 2013). Clinical mastitis shows clinical signs such as red and swollen udders and fever in dairy cows. The milk produced looks watery, with flakes and clots in the milk (Kibebew, 2017). In cases of mastitis, the treatment that can be given is intra-mammary antibiotics from the b-lactam group caused by streptococci and staphylococci (Pyorala, 2009). Prevention and control of dairy cattle health

management are important and need to be considered to prevent the occurrence of mastitis on farms.

II. CASE DESCRIPTION

A case was reported at Balai Besar Pembibitan Ternak Unggul dan Hijauan Pakan Ternak (BBPTUH-HHPT) Baturraden at Limpakuwus Farm, Sumbang District, Banyumas District, Central Java. Cow with ear tag 6331, aged 6 years and weighing 254 kg, had a reddened udder and enlarged size observed during milking at 6:00 am. On palpation, the cow showed a pain reflex on the udder.

Dairy cows at Farm Limpakuwus BBPTUH-HPT Baturraden are Friesian Holstein. Clinical examination results found the cow's temperature at 38.50 °C, respiratory rate at 28 times per minute, and pulse rate at 65 times per minute. The body condition score (BCS) of the cow was 3, which was characterized by slightly visible hip bones and ribs and a slightly visible tail-head area. Clinical signs were udder asymmetry, pain on palpation, udder redness, and inflammation. According to Sudono et al. (2003), there are two types of mastitis that often attack dairy cows, namely clinical and subclinical mastitis. Clinical mastitis shows visible clinical signs such as abnormalities in the milk that look slimy and clotted, infection in the nipple so that the nipple is inflammatory, and a sensitive reaction during milking. In subclinical mastitis, abnormalities in milk are not apparent unless mastitis testing methods are used.



Figure 1. Inflammation of the udder (arrow)

III. RESULTS AND DISCUSSION

The diagnosis of clinical mastitis is based on clinical signs, clinical examination, and a screening test in the form of the California Mastitis Test (CMT). California Mastitis Test is a diagnostic method to detect mastitis at low levels of abnormality. California Mastitis Test is easy to

perform and is effectively used to detect mastitis with a high sensitivity rate (above 90%) (Qolbaini et al., 2014). The California Mastitis Test reagent is *detergent plus bromcresol purple*, containing 3% *alkylaryl sulfonate*, 1.5% NaOH, and *Broomcresol purple* indicator. The California Mastitis Test method is carried out by mixing milk with the reagent in a ratio of 1:1 and seeing the test results within 10–15 seconds.



Figure 2. The CMT assay on milk samples shows a reaction with the reagent in the form of a mass forming a gel (arrow), so that the CMT value of milk samples is +++ with a moderate degree of interpretation.

Based on the results of the California Mastitis Test assay, the milk samples were thickened to form a gel and therefore tested positive for mastitis. California Mastitis Test is based on the reaction between reagents containing *arylsulfonate* and leucocytes contained in infected milk. This reaction will cause thickening or gel formation in milk (Qolbaini et al., 2014)

The medication performed on cows with ear tag 6331 was intramammary antibiotic therapy using *cephalexin* and *kanamycin* (*Terrexine LC*®). *Terrexine LC*®, containing *Cephalexin* 200 mg and *Kanamycin* 100,000 IU, was given as 1 dose after milking 3 times.



Figure. *Terrxine* LC® (personal documentation).

The combination of these two antibiotics provides broad-spectrum treatment and has been shown to be effective against pathogenic bacteria in mastitis cases, especially *Staphylococcus aureus*, *Streptococcus uberis*, and *Escherichia coli* (Pole et al., 2023). In addition to providing intramammary treatment, dairy cows with mastitis are separated from other cows to prevent transmission to healthy cows.

IV. CONCLUSION

Based on clinical examination and the California Mastitis Test, the cow was diagnosed with clinical mastitis with clinical signs of udder asymmetry, pain on palpation, udder redness, and inflammation. California Mastitis Test showed a positive result. Treatment was to administer *Terrexine* LC® antibiotics containing *Cephalexin* 200 mg and *Kanamycin* 100,000 IU. The suspected sick cows were separated to prevent transmission to healthy cows.

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RIWAYAT HIDUP



Penulis Penulis dengan nama lengkap Afifah Umniah J, lahir di Pangkajene pada tanggal 11 November 1998 dari Ayahanda Jamaluddin dan Ibunda Hasriani. Penulis merupakan anak pertama dari 3 bersaudara, dengan adik Athifah Muthmainnah J dan Akifah Nabilah J. Penulis menyelesaikan sekolah dasar di SDN 4 Timoreng Panua dan lulus pada tahun 2010 kemudian melanjutkan pendidikan ke SMP IT Wahdah Islamiyah dan lulus pada tahun 2013. Pada tahun 2016 penulis menyelesaikan pendidikan di SMAN 1 Panca Rijang. Penulis diterima di Program

Studi Kedokteran Hewan Fakultas Kedokteran Universitas Hasanuddin pada tahun 2017 melalui jalur SBMPTN. Selama perkuliahan penulis aktif di organisasi internal kampus yaitu Himpunan Mahasiswa Kedokteran Hewan (HIMAKAHA) FK-UNHAS dan menjabat sebagai Anggota Bidang Kajian Strategi Pegurus Harian Organisasi (PHO) HIMAKAHA FK-UNHAS Periode 2019-2020 dan menjabat sebagai Sekretaris Dewan Perwakilan (DP) HIMAKAHA FK-UNHAS Periode 2020-2021. Penulis juga aktif dalam kegiatan akademik dan pernah menjabat sebagai Asisten Laboratorium Fisiologi Veteriner dan Asisten Laboratorium Ilmu Teknologi Reproduksi serta Asisten Laboratorium Ilmu Kebidanan dan Kemajiran. Penulis menyusun skripsi tugas akhir strata sarjana dengan judul penelitian **“Gambaran Darah Ikan Nila Salin (*Oreochromis niloticus*) Yang Telah Diberikan Pakan Sinbiotik (*Bacillus subtilis*) dengan Frekuensi Pemberian Pakan Berbeda yang Dipapar Dengan Bakteri *Aeromonas hydrophila*”** dan tugas akhir strata profesi dokter hewan dengan judul **“Penanganan Mastitis Klinis pada Sapi Perah Friesian Holstein (FH) di Balai Besar Pembibitan Ternak Unggul dan Hijauan Pakan Ternak (BBPTUH – HPT) Baturraden”**.