

Diagnostic approach and therapeutic intervention for pyometra in multiparous dairy cattle: a case study

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ABSTRACT: Pyometra is a prevalent and clinically important reproductive disorder in multiparous cattle, and is characterised by the accumulation of purulent exudate within the uterine lumen. This article examines the diagnosis and management of pyometra in a six-year-old Friesian Holstein cow from a traditional dairy farm in Lembang. The cow, with a history of abortion at 35 days of gestation during the last calving, presented with continuous white mucous vaginal discharge. Clinical assessment via rectal palpation revealed an enlarged uterus, which was initially suggestive of pregnancy. Diagnostic evaluations included haematology and transrectal ultrasonography. Haematological results showed elevated white blood cell counts, indicating a bacterial infection. Ultrasonography confirmed pus within the uterus and thickened uterine wall. Treatment consisted of uterine flushing and hormonal injections to induce contractions, facilitate the expulsion of accumulated fluids, and restore regular estrous cycles. A significant reduction in the size of the cornu uteri was observed one-week post-treatment, demonstrating the effectiveness of the intervention.

Keywords:

dairy cow, haematological test, hormonal injection, pyometra, transrectal ultrasonography

■ INTRODUCTION

Effective reproduction encompasses crucial processes, including mating, conception, birth of healthy offspring, maintenance of ovarian function, and rejuvenating uterine health (Dabale *et al.* 2020). The health of the uterus is central to the fertility and economic stability of the dairy industry. Uterine issues compromise a cow's ability to conceive and sustain pregnancy and necessitate increased antibiotic use, which can affect overall animal welfare and farm economics (Adnane *et al.* 2024). Common reproductive disorders of the bovine uterus include endometritis, metritis, and pyometra. Pyometra is an infection characterised by acute or chronic inflammation of the uterine wall, leading to pus accumulation in the uterine cavity (Sethi *et al.* 2020). Compared to other mammals, such as ruminants, cows are particularly susceptible to uterine diseases because of the dynamic nature of bacterial exposure and elimination in their reproductive system. It is typical for most cows to experience bacterial contamination within the first two weeks post-calving (Sheldon & Dobson 2004).

The diagnosis of reproductive disorders in dairy cows requires clinical assessment, laboratory tests, and imaging techniques. Clinical examination involves thorough physical, rectal, and vaginal evaluation. Laboratory tests, such as complete blood counts, are crucial for identifying systemic infections or inflammation affecting reproductive function. Ultrasonography, particularly transrectal ultrasonography, is

preferred for the detailed imaging of reproductive organs, allowing the detection of abnormalities or infections (Richardson *et al.* 2010). In Indonesia, there is limited literature on pyometra diagnosis using blood tests and ultrasonography. This study aims to fill this gap by providing detailed insights into these diagnostic techniques for timely and accurate reproductive health management and enhancing dairy farm productivity and profitability.

■ CASE

Anamnesis and Signalment: A 6-year-old multiparous Holstein Friesian cow, previously experiencing an abortion at 35 days of gestation, has been showing a white discharge from the vulva, sometimes accompanied by urination, for the past month (Figure 1A). **Physical Examination:** Rectal temperature of 38.6°C and rectal palpation identified a fluid-filled, enlarged uterus and a corpus luteum in one ovary. **Diagnostic Findings:** Ultrasound imaging detected an enlarged uterus with a thickened endometrium and pus within the uterine lumen. Haematological analysis revealed an elevated white blood cell count, suggesting bacterial infection. **Diagnosis:** Pyometra was diagnosed based on clinical and diagnostic findings. **Prognosis:** Fausta.

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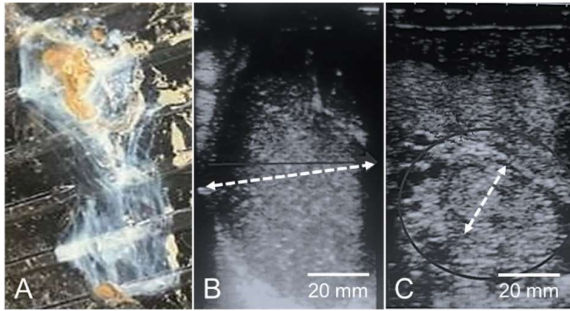


Figure 1 Clinical and ultrasonographic findings of pyometra in cow cornua uteri: (A) vulvar white discharge, (B) ultrasonographic image showing enlarged uterus and pus accumulation (white arrow), (C) significant reduction in cornua uteri size one week post-treatment.

Table 1 hematological parameters of the cow diagnosed with pyometra

Parameter	Result	Reference
White Blood Cells ($10^3/\mu\text{L}$)	18.65 ↑	4.00-12.00
Lymphocyte (%)	9.70 ↓	40.00-75.00
Granulocyte (%)	85.30 ↑	15.00-65.00
Granulocyte ($10^3/\mu\text{L}$)	15.91 ↑	0.60-5.00
Mean Corpuscular Hemoglobin (MCH) (pg)	19.50	11.00-19.00
Red Cell Distribution Width (RDW-CV) (%)	21.30	14.00-19.00
Mean Platelet Volume (MPV) (fL)	8.10	3.80-7.00

Treatment: The cow was managed with supportive care to prevent surgical intervention. Topical treatment involved uterine irrigation using a solution of Procaben 5 million IU, Glucortin 7 ml, and povidone-iodine 10 ml dissolved in 1 litre of distilled water. Additionally, hormonal therapy involving an injection of PGF2 α (2 ml of cloprostenol) was administered intramuscularly. Systemic antibiotic treatment was administered subcutaneously with ceftiofur hydrochloride: 2.2 mg/kg on the first day followed by 1.1 mg/kg on the second day).

RESULTS AND DISCUSSION

Ultrasound imaging confirmed uterine enlargement and the presence of pus within the uterine lumen (Figure 1B), consistent with the definition of pyometra which involves the accumulation of purulent or mucopurulent fluid, uterine distension, a closed cervix, and an active corpus luteum (Sheldon *et al.* 2008). Haematological analysis detailed in Table 1 showed elevated white blood cell counts ($18.6 \times 10^3/\mu\text{L}$) and granulocytes ($15.9 \times 10^3/\mu\text{L}$), indicative of leukocytosis, a typical response to infection or inflammation (Bijanti *et al.* 2010). These ultrasound and haematological findings confirmed the diagnosis of pyometra in the cow.

Treatment for pyometra involves uterine irrigation, PGF2 α hormone administration, and antibiotics. Uterine irrigation helps remove purulent material, reduces the bacterial load, and promotes healing by minimising inflammation. Hormonal injections aim to expel the accumulated fluid, prevent secondary infections, and enhance recovery. Combining uterine flushing with PGF2 α injections effectively removed pus within a day post-treatment. Sheldon *et al.* (2008) highlighted factors influencing uterine infections, such as retained placenta, calving conditions, twin births, dystocia, and diet. Additionally, Raja *et al.* (2024) reported successful

pyometra treatment outcomes with prostaglandins and antibiotics supplemented by three days of vaginal douching, leading to smooth recovery.

Three days post-treatment, oestrus signs in the cow indicated rapid hormonal and ovarian function resumption due to PGF2 α 's luteolytic effects, which breaks down the corpus luteum and releases a follicle for ovulation (Pate & Hughes 2023). The onset of oestrus within five days post-treatment suggests effective synchronisation. An ultrasound seven days post-treatment showed a normal-sized uterus with no residual fluid (Figure 1C), confirming complete pyometra resolution and uterine normalisation. This outcome validated the effectiveness of the treatment in resolving uterine distension and eliminating infections.

CONCLUSION

The combined treatment of pyometra using uterine irrigation, PGF2 α hormone injections, and antibiotics was effective in a Holstein Friesian cow. Confirmed by ultrasound and hematological findings, the treatment rapidly cleared the infection, normalized uterine size, and restored estrous behavior within days.

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