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Dhivyabharathi D

Post Graduate Student,
(M.V.Sc., Surgery), Veterinary
College and Research Institute,
Namakkal, Tamil Nadu, India

Dharmaceelan S

Professor and Head, Department
of Clinics, Veterinary College and
Research Institute, Tamil Nadu
Veterinary and Animal Science
University, Namakkal, Tamil
Nadu, India

Vijayakumar M

Assistant Professor, Department
of Veterinary Surgery and
Radiology, Veterinary College
and Research Institute, Tamil
Nadu Veterinary and Animal
Science University, Namakkal,
Tamil Nadu, India

Sivaraman S

Assistant Professor, Department
of Clinics, Veterinary College and
Research Institute, Tamil Nadu
Veterinary and Animal Science
University, Namakkal, Tamil
Nadu, India

Kathirvel S

Professor and Head, Department
of Veterinary Surgery and
Radiology, Veterinary College
and Research Institute, Tamil
Nadu Veterinary and Animal
Science University, Namakkal,
Tamil Nadu, India

Corresponding Author:

Dhivyabharathi D

Post Graduate Student,
(M.V.Sc., Surgery), Veterinary
College and Research Institute,
Namakkal, Tamil Nadu, India

Incidence of peritonitis in cattle and buffaloes: A retrospective study

Dhivyabharathi D, Dharmaceelan S, Vijayakumar M, Sivaraman S and Kathirvel S

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Abstract

A retrospective study was conducted in 3549(3522 white cattle, 27 buffaloes) dairy cattle and buffaloes to find out the incidence of peritonitis presented to Large Animal Medicine and Surgery unit, Veterinary Clinical Complex, Veterinary College and Research Institute, Namakkal from January 2021 to March 2023. Animals with the history of anorexia, decreased milk production and reduction in the quantity of dung voiding were subjected for complete clinical examinations, haemato-biochemical analysis, radiological observations, abdominocentesis and ultrasound examination. Among 3549 animals, two hundred and fifty animals (7.04%) were affected with peritonitis. Jersey cross bred cattle at the age of 5-6 years and female animals (97.04%) had the highest incidence of peritonitis. This study can be recorded based on the incidence on species, breed, age, sex and age for future studies and to prevent the economic losses of the farmers.

Keywords: Incidence, peritonitis in cattle, buffaloes, retrospective study, ruminants globally

Introduction

Peritonitis, a potentially life-threatening inflammation, is recognized as a significant and common cause of death in ruminants globally. This inflammation can manifest as either acute or chronic and affects the peritoneal cavity, either as a primary condition or secondary to various pathological factors, leading to localized or generalized inflammation (Andrews *et al.*, 2008) [2]. The majority of affected cattle, comprising 87% are from the dairy sector and 93% are over two years old (Kahn, 2005) [6]. In India, the prevalence of peritonitis varies among breeds, with figures of 47.7% in Jersey crossbred cows, 17.9% in Holstein-Friesian cows, 8.96% in non-descript cows, 1.49% in Sindhi cows and 23.88% in Murrah cross buffaloes (Ram Prabhu *et al.*, 2003) [9]. Notably, 99.1% of affected animals are typically females (Abu-Seida and Al-Abbadi, 2016) [1]. The incidence remains elevated in stall-fed animals where feed contamination with foreign bodies is a common occurrence (Braun *et al.*, 2020) [3]. Additionally, 90% of cases occur during the second lactation and in older cows (Muino *et al.*, 2021) [7]. Poor management, stress and nutritional disorders are identified as major risk factors, leading to a significant reduction in milk production and an increase in cattle deaths, resulting in substantial economic losses (Constable *et al.*, 2016) [4]. The significance of this disease lies not only in its higher prevalence among other digestive disorders but also in the challenges associated with early prediction and evaluation through physical examination. Clinical signs observed in cattle with peritonitis include persistent tympany, depression (100%), suspended rumination (100%), dry muzzle (50%), distended abdomen (50%), rumen atony and constipation (100%) (Hussain *et al.*, 2011) [5]. It is crucial to document this information for knowledge acquisition, effective case management and future research endeavors. This study aimed to document the incidence of peritonitis in cows presented at the Veterinary Hospital, Veterinary College and Research Institute in Namakkal, Tamil Nadu.

Materials and Methods

The study focused on cows affected by peritonitis and admitted to the Large Animal Medicine unit of the Veterinary Clinical Complex at Veterinary College and Research Institute, Namakkal, during the period from January 2021 to March 2023.

These animals underwent an extensive examination, including detailed clinical assessment, hemato-biochemistry, radiography, ultrasound and analysis of peritoneal fluid. Standard methods were followed for the clinical examination. Venous blood samples, amounting to 5 milliliters, were collected in vacutainer tubes containing ethylene diamine tetra acetate (EDTA K₃) as an anticoagulant for hematological investigation. Animals suspected of having foreign bodies underwent radiography using a 400 mA HF Advantage GE X-ray unit. Ultrasonographic examination was conducted on all animals in the study, employing an Esoate Mylab 40 Vet ultrasound machine with a 3.5 MHz transducer.

Results and Discussions

Based on the occurrence of the disease the study was further classified as

- Species wise incidence.
- Breed wise incidence.
- Sex wise incidence.
- Age wise incidence.

Witek (2022) [13] observed that the occurrence of peritonitis varied among large animal species, with cattle and buffaloes exhibiting the highest incidence. Horses showed a lower frequency, while the diagnosis was rare in pigs, sheep and goats (i.e., Cattle > Buffaloes > Horses > Pigs > Sheep and goats). Among 3549 number of cattle and buffaloes (3522 cattle and 27 buffaloes), 250 animals (237 cattle and 13 buffaloes) of 7.04% were affected with peritonitis (chart 1).

The cattle species are more affected for peritonitis around 94.80% when compared to buffaloes 5.20% in this present study (chart 2).

In cattle, the highest incidence of peritonitis affections, constituting 59.07% of Jersey cross bred cows, 22.36% of Holstein Friesian cross bred cows, 8.86% of non-descript cows, 5.06% of Kangeyam cattle, 2.53% of Sindhi cows,

0.42% of Hallikar, Gir and Umbalacherry followed by 0.84% of Pullikulam breeds (Chart 3). In bubaline, more incidence was recorded in Crossbred Murrah of 76.90%, 15.30% of non-descript buffalo followed by 7.69% of Nili Ravi breed (chart 4).

This study reveals the highest incidence reported in female animals 97.04% affected with peritonitis and 2.95% of male (Chart 5). In Jersey cross bred cows contribute about 97.04%, 23.04% of Holstein Friesian cross bred cows, 9.13% of non-descript cows, 3.47% of Kangeyam cattle, 2.60% of Sindhi cows and 0.43% of Hallikar and Gir breeds. In buffalo breeds, 76.92% of Murrah cross were affected with peritonitis followed by non-descript buffalo of 15.38% and 7.69% of Nili Ravi.

The highest incidence of peritonitis occurring between 5-6 years of age and older animals of different breeds were reported (22.40%) followed by 4-5 years (17.30%) and 3-4 years (14.70%) with similar study of (Chart 6), (Sivaraman *et al.* 2019) [12]. The elevated percentage of animals in this age category being kept by farmers, likely due to increased production levels, could explain these findings. The study suggests that the higher incidence observed in Jersey crossbred cows may be influenced by their prevalence in the Namakkal population and the breeding policy implemented by the State Government (Ramprabhu *et al.*, 2003) [9]. Existing reports indicate general survival rates ranging from 50% to 70%, with notably lower rates for the restoration of productivity in farm animals (Thomas Witek, 2022) [13]. The overrepresentation of females and Jersey crossbred cattle in this study may be linked to a higher proportion of females and Jersey crossbreds compared to other breeds in the studied region (Sivaraman *et al.*, 2019) [12]. Sasikala (2016) [11], Periyasamy (2017) [8], Reddy (2019) [10] and Sivaraman *et al.* (2019) [12] have similarly documented a higher incidence of medical disorders in female cattle and Jersey crossbred cows in studies conducted in the same geographical location.

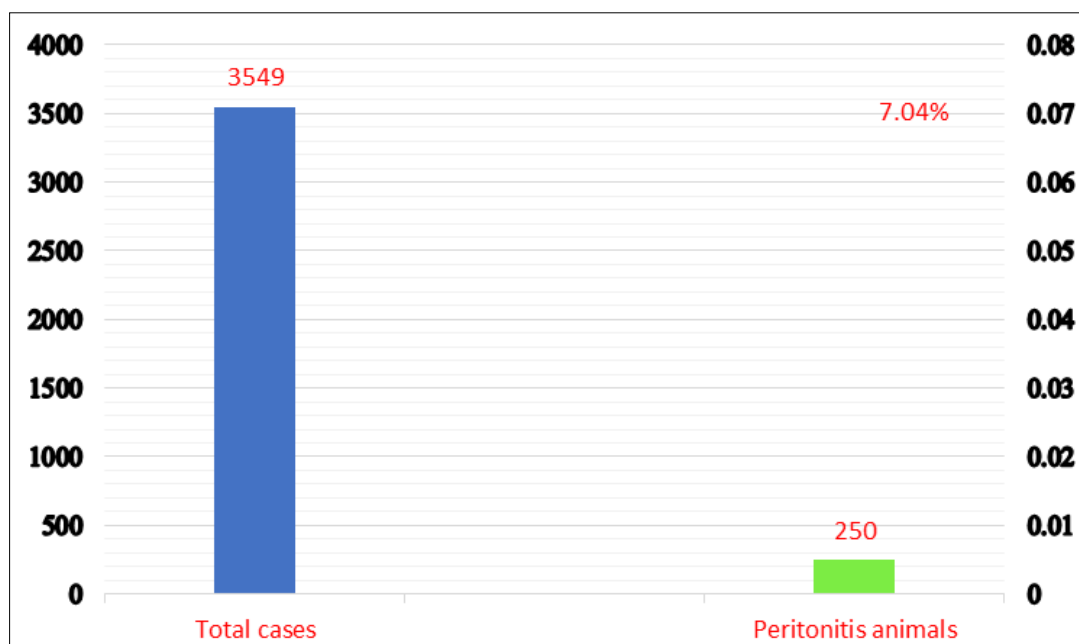


Chart 1: Incidence of peritonitis cattle and buffaloes at Veterinary College and Research Institute Namakkal during 2021-2023

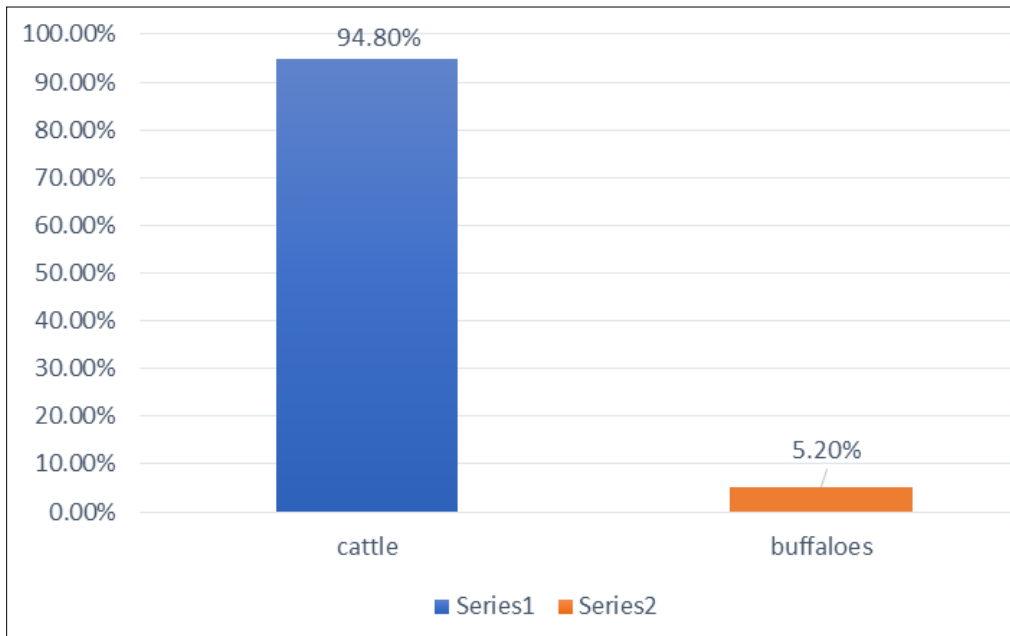


Chart 2: Species wise incidence of peritonitis at Veterinary College and Research Institute Namakkal during 2021-2023

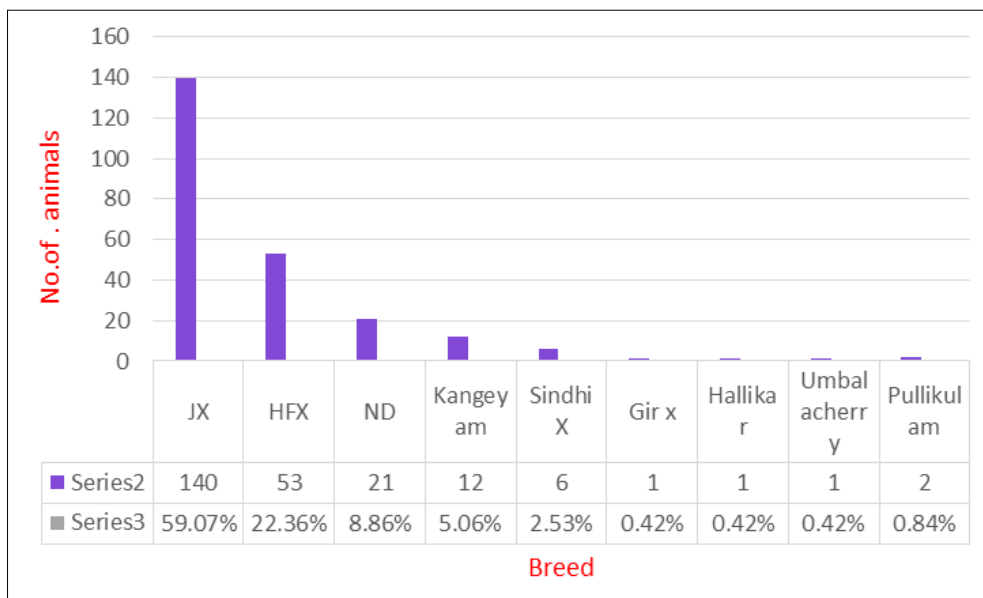


Chart 3: Breed wise incidence of peritonitis cows at Veterinary College and Research Institute Namakkal during 2021-2023

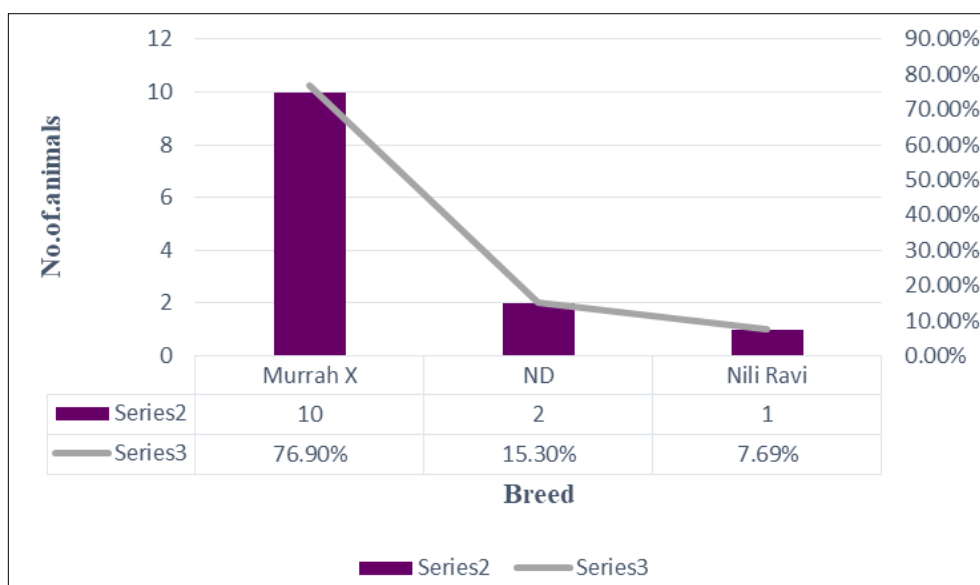


Chart 4: Breed wise incidence of peritonitis buffaloes at Veterinary College and Research Institute Namakkal during 2021-2023

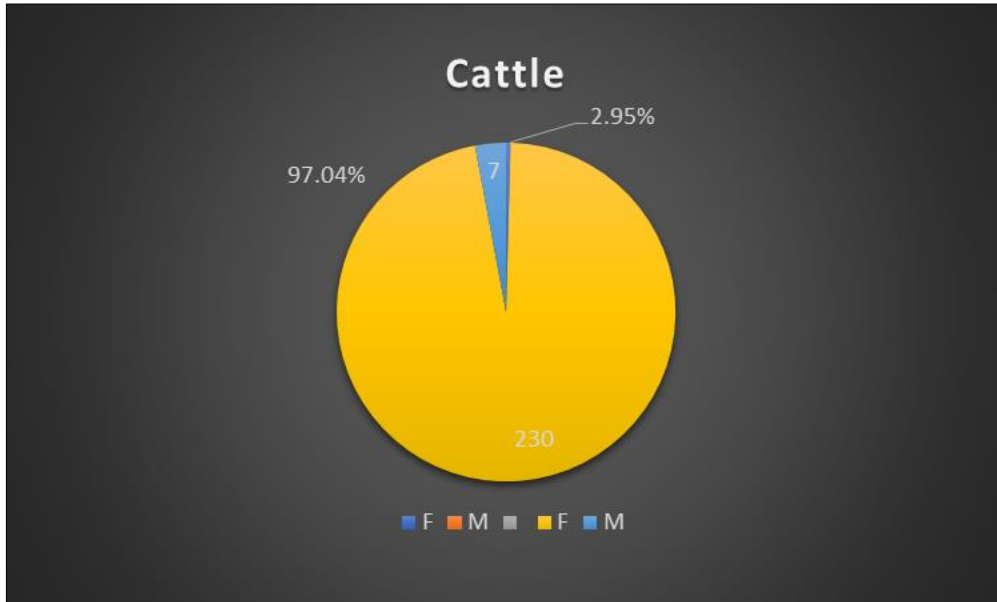


Chart 5: Sex wise incidence of peritonitis animals at Veterinary College and Research Institute Namakkal during 2021-2023

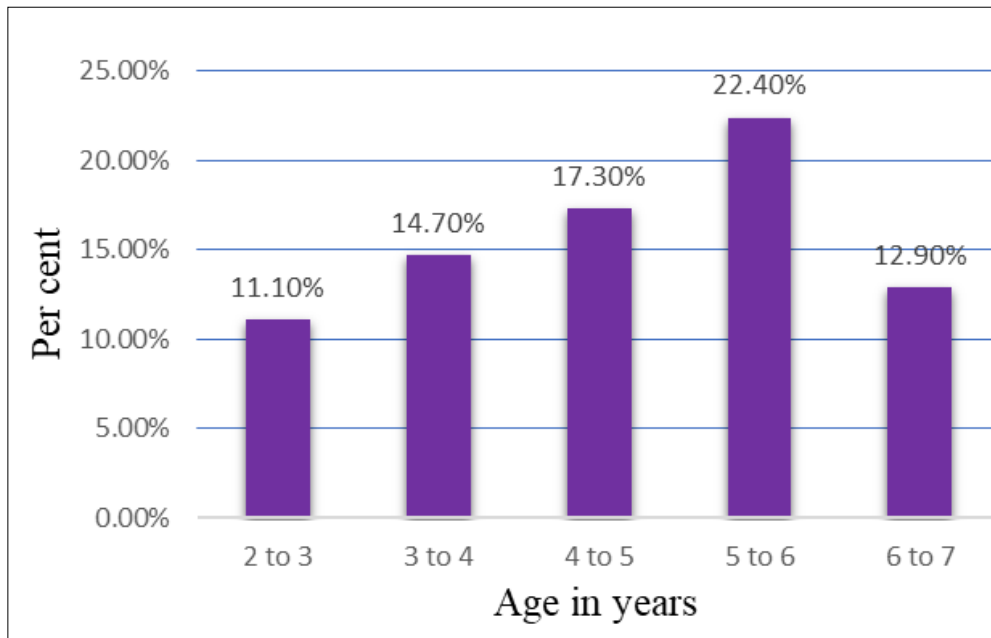


Chart 6: Age wise incidence of peritonitis cattle and buffaloes at Veterinary College and Research Institute Namakkal during 2021-2023

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Conclusions

The study reveals a notable 7.04% incidence of peritonitis in dairy cattle and buffaloes, with Jersey crossbred cattle aged 5-6 years and female animals being particularly susceptible. These findings underscore the importance of targeted preventive measures, considering species, breed, age, and gender, to minimize economic losses for farmers in the future.

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