Prevalence of Clinical Diseases in Crossbred Frieswal Bulls at an Organized Bull Rearing Unit

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Abstract

The study was conducted on the clinical cases available at bull rearing unit of ICAR- Central Institute for Research on Cattle. Diagnosis of disease was done on the basis of history, clinical signs and clinical examination findings. A total of 592 clinical cases were recorded during the period of study from October 2013 to September 2015. Of the 592 recorded clinical cases of bulls, 74.6% were medicinal, 20.95 % surgical and 4.39% reproductive cases. Of the total clinical cases, highest numbers (44.59%) were recorded during rainy season followed by summer (30.74%) and winter season (24.66%). The major clinical diseases prevalent in bulls were lameness, fever, tick infestation, abscess, wound, inappetance, diarrhea, balanoposthitis and conjunctivitis. Occurrence of fever, wound and abscess was more in rainy season while tick infestation and diarrhea were more prevalent during summer season. Lameness, balanoposthitis, dermatitis were found to occur more during winter season.

Key words: Bulls, Clinical Disease, Frieswal, Prevalence, Season

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Introduction

Livestock play crucial role in the economy of rural people of our country. In commercial dairy farming, bull must provide high conception rate in the breeding herd and impart genetic gain to the progeny. To achieve this, it is essential to maintain the bulls in healthy state and preventing the risk of temporary infertility through various health problems. Among various constraint in bull rearing, diseases are the most important which degrade the semen production and quality. Number of reports on epidemiology and prevalence of various health problems in cattle, buffalo and goat are available in India and abroad (Lodi *et al.*, 2011; Karim *et al.*, 2014; Gopal *et al.*, 2015) but scanty information is available on the prevalence of clinical diseases in breeding bulls in the scientific literature. The purpose of present study was to describe prevalence of various diseases in breeding bulls during different seasons of the year so that proper

planning and preventive measures can be taken to minimize their occurrence and loss of semen production and quality.

Materials and Methods

The present study was conducted in the crossbred Frieswal bulls (Holstein Fresian X Sahiwal) at bull rearing unit of ICAR- Central Institute for Research on Cattle. The animals were kept in well ventilated house with covered area having pakka floor and open space with kachcha floor. All the animals included in the present study were given green fodder, wheat straw and concentrate mixture with free excess to clean drinking water. Bulls were vaccinated regularly for foot and mouth disease and hemorrhagic septicemia annually. Animals were dewormed with broad spectrum anthelmintics regularly twice in a year. The bulls which suffered with clinical diseases during the period from October 2013 to September 2015 were included in the study. Diagnosis of disease was made on the basis of history, clinical signs and clinical examination findings. The clinical cases were categorized into three major groups such as medicinal, surgical and reproductive cases. The study period was divided into three seasons on the basis of local climatic conditions viz summer (March to June), Rainy (July to October) and winter (November to February). Data were organized in microsoft excel sheet and relative percentage of various disease conditions prevalent in bulls in different seasons were calculated. Data were analyzed as per standard methods of Snedecor and Cochran (1994).

Results and Discussion

A total of 592 clinical cases were recorded during the period of study from October, 2013 to September, 2015. The distribution of different type of cases according to different seasons is presented in table 1. Of the 592 recorded clinical cases of bulls, 74.6% were medicinal, 20.95 % surgical and 4.39% reproductive cases. This observation supports the earlier reports of Karim *et al* (2014) who recorded 86.5% medicinal, 7.3% surgical and 6.1% gynecological cases in cattle. Of the total clinical cases highest numbers of clinical cases (44.59%) were recorded during rainy seasons followed by summer (30.74%) and winter season (24.66%).

Medicinal Cases

Foot Lameness

Overall prevalence of foot lameness was highest among all diseases (16.72%). The lameness in the animals was due to foot abnormalities recorded as overgrown hoof, interdigital wound, interdigital fibroma, hoof crack, coronet swelling etc. Highest cases of lameness (30.14%) were observed during winter season followed by summer (15.38%) and rainy season (10.23%). Similar findings of foot lameness were reported by Kalsi *et al* (2002) who recorded higher incidence of lameness in crossbred

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cattle with highest occurrence during winter season as compared to summer and rainy season. The heavy body confirmation with high body weight in frieswal bulls might exert irregular pressure on digits leading to damage to corium causing lameness (Kalsi *et al.*, 2002). Continuous wet conditions under foot and stony ground predispose the animals to foot lesions. Skin near the hoof is abraided when it remains soft and swollen due to continuous wetting which is followed by infection with secondary bacterial invaders like *Fusobacterium, Bacteroides* etc. (Radostits *et al.*, 2007).

Fever

The rectal temperature when recorded> 102.5^0F persistently was considered as fever. Analysis of the clinical cases in bulls revealed that 15.70% bulls were found to be affected with fever. Percentage of occurrence of fever was higher in this study as compared to earlier reports of Rahman *et al.*, 2012 and Karim *et al.*, 2014 who reported 5.1% and 7.8% cases of fever respectively in two different epidemiological studies in cattle. The highest percentage of cases of fever were recorded in rainy season (19.32%) followed by summer (13.74%) and winter (11.64%). Fever may be septic as a result of infection with bacteria, virus, protozoa etc. or aseptic (Radostits *et al.*, 2007). Further investigation is required to explore the infectious and noninfectious causes of fever in bulls for treatment and control purposes.

Diarrhea

In the present study 7.94% of cases were found to suffer from nonspecific diarrhea. The proportion of diarrhea was highest during summer season (12.09%) followed by rainy season (7.58%) while least prevalence was recorded during winter season (3.42%). These observations could be compared well with the 6.94% of nonspecific diarrhea in cattle by Sarker *et al* (2013). Diarrhea in farm animals is produced by variety of causes including bacteria, virus, fungi, helminth and dietary changes.

Inappetance

Complete to partial loss of appetite was diagnosed in 4.9% of bulls in the present study. Relatively higher occurrence of inappetance was reported by Sarker *et al* (2013) who found 17.55% cases of inappetance of cattle on retrospective evaluation of clinical diseases of cattle in some parts of Bangladesh. Oral lesion, indigestion, toxemia, stress, poisoning and lot of other reasons may be responsible for inappetance which require further confirmation through clinical and laboratory examination.

Tick Infestation

Tick infestation was recorded in 14.02% bulls under present study. Highest prevalence of tick infestation was present in summer season (19.23%) followed by winter (15.07%) and rainy season (9.85%). Tick infestation was recorded throughout the year in significant number of animals. Ticks transmit variety of

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hemoprotozoan, rickettsial diseases which markedly affect health in bulls and thus may deteriorate semen production and quality. High percentage of pyrexia recorded in bulls under present study might be due to tick transmitted diseases which require laboratory investigation for confirmation (Radostits *et al.*, 2007).

Table 1: Prevalence of various clinical diseases in Frieswal bulls (n=592)

Disease	Total No. of bulls affected	No. of bulls Rainy Season	No. of bulls Summer Season	No. of bulls Winter Season
All Diseases	**592(100)**	**264(44.59)**	**182(30.74)**	**146(24.66)**
Medicinal cases				
Bloat	6(1.01)	4(1.52)	1(0.55)	1(0.68)
Conjunctivitis	18(3.04)	9(3.41)	6(3.30)	3(2.05)
Debility	16(2.70)	9(3.41)	6(3.30)	1(0.68)
Dermatitis	17(2.87)	5(1.90)	2(1.10)	10(6.85)
Diarrhea	47(7.94)	20(7.58)	22(12.09)	5(3.42)
Epistaxis	6(1.01)	3(1.14)	-	3(2.05)
Fever	93(15.70)	51(19.32)	25(13.74)	17(11.64)
Gingivitis	2(0.34)	1(0.38)	1(0.55)	-
Hematuria	3(0.51)	2(0.76)	1(0.55)	-
Hemoglobinuria	3(0.51)	1(0.38)	2(0.76)	-
Impaction	1(0.17)	1(0.38)	-	-
Inappetance	29(4.90)	17(6.44)	7(3.85)	5(3.42)
Lameness	99(16.72)	27(10.23)	28(15.38)	44(30.14)
Neurological disease	2(0.34)	1(0.38)	-	1(0.68)
Otitis	3(0.51)	2(0.76)	-	1(0.68)
Pneumonia	8(1.35)	1(0.38)	3(1.65)	4(2.74)
Tick infestation	83(14.02)	26(9.85)	35(19.23)	22(15.07)
Warts	5(0.84)	3(1.14)	2(1.10)	-
Sub-Total	**442(74.66)**	**184(69.70)**	**139(76.36)**	**119(81.53)**
Surgical cases				
Abscess	43(7.26)	29(10.98)	8(4.40)	6(4.11)
Arthritis	2(0.34)	1(0.38)	-	1(0.68)
Fracture	1(0.17)	1(0.38)		-
Tail Gangreen	2(0.34)	2(0.76)	-	-
Wound	76(12.84)	43(16.29)	26(14.29)	7(4.78)
Sub-Total	**124(20.95)**	**76(28.79)**	**34(18.69)**	**14(9.57)**
Reproductive cases				
Balanoposthitis	19(3.21)	2(0.76)	7(3.85)	10(6.85)
Orchitis	7(1.18)	2(0.76)	2(1.10)	3(2.05)
Sub-Total	**26(4.39)**	**4(1.52)**	**9(4.95)**	**13(8.90)**

(Figures in parenthesis indicate percentage (%) of bulls)

Conjunctivitis: Conjunctivitis was observed in 3.04% of bulls under this study. Rahman *et al* (2012) reported 1.9% cases of conjunctivitis in cattle. The prevalence of conjunctivitis was higher during rainy (3.41%) and summer season (3.30%) as compared to winter season (2.05%). It occurs as a result of

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infection with *Morexella, Neisseria, Mycoplasma, Chlamydia* and ocular form of infectious bovine rhinotracheitis in cattle (Radostits *et al.*, 2007).

Dermatitis

Dermatitis was recorded in 2.87% cases of bulls under present study. Cases of dermatitis were higher during winter (6.85%) as compared to summer (1.10%) and rainy season (1.90%). This is in accordance with findings of earlier study conducted by Rahman *et al* (2012) who reported dermatitis in 2.9% cases of cattle. It is basically an inflammation of the deeper layer of the skin involving the blood vessels and lymphatics caused by infection, ectoparasitic infestation, physical trauma, allergy and autoimmune causes.

Debility

Debility was seen in 2.70% of bulls under present study and it was more prevalent during summer (3.30%) and rainy season (3.41%). The main causes of debility includes malnutrition, malabsorption, gastroenteropathy, worm infestation, chronic wasting disease like tuberculosis, johne,s disease which should be investigated in bulls showing debility for long time.

Pneumonia

Prevalence of pneumonia recorded in bulls under present study was 1.35%. Karim *et al* (2014) and Samad (2001) reported 0.7% and 0.84% of pneumonia in cattle respectively. The highest percentage of pneumonia was recorded during winter (2.74%) followed by summer (1.65%) and rainy season (0.38%). Samad (2001) also reported highest incidence of pneumonia in cattle during winter season. Contrary to findings of present study Rahman *et al* (2012) reported highest incidence of pneumonia during summer season. Pneumonia is caused by bacteria, virus, and parasite, physical and chemical agents. Mostly it is bronchogenic but some time it may originate by the hematogenous route.

Bloat

This study recorded 1.01% cases of bloat in bulls. The occurrence of bloat in bulls was lower in comparison to the earlier findings of Karim *et al* (2014) who reported 2.5% prevalence of bloat in cattle. Bloat is mainly dietary in origin and occurs by excess feeding of legume forages and high level finely ground grain ration with minimal roughage (Sutradhar *et al.*, 2000). Bloat if not treated early is fatal. It might be possible to reduce this problem by identifying some controllable risk factors at the bull farm.

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Warts

The study recorded 0.84% cases of warts in bulls. This finding supports the reports of Noruddin and Dey (1990) and Samad (2001) who reported 0.7% and 0.58% prevalence of warts in cattle respectively. Warts are common benign tumors induced by host specific papilloma virus and their occurrence is influenced by immune-suppression and latent infection (Radostits *et al.*, 2007).

Epistaxis

Epistaxis was present in 1.01% cases of bulls in this study. It is caused by hemorrhagic lesion of nasal cavity, nasopharynx etc. In bulls under present study it might be due to traumatic damage of nasal septum by nose ring during exertion.

Hematuria, hemoglobinuria, impaction, gingivitis, otitis, neurological diseases were observed in 0.17% to 0.51% of bulls and no seasonal variation could be seen in the occurrence of these disease conditions.

Surgical Cases

Wound

Wounds were found in 12.84% of bulls in present study. Higher prevalence of wound were recorded during rainy season (16.29%) followed by summer (14.29%) while least cases were observed during winter season (4.78%). Rahman *et al* (2012) and Hossain *et al* (1986) reported wound in higher percentage of cases in cattle as 52.8% and 45.2% respectively. These are localized cutaneous infection common in farm animals and occur as a result of bacterial infection secondary to traumatic injuries.

Abscess

Abscesses were recorded in 7.26% cases of present study. Percentage of abscess cases was higher as contrary to findings of Rahman *et al* (2012) and Samad (2001) who reported prevalence of abscess in 1.1% and 1.56% of cattle respectively. Highest percentage of abscess was observed during rainy season (10.98%) than winter (4.11%) and summer season (4.4%). Rahman *et al* (2012) reported highest percentage of abscess during summer season in cattle.

Tail gangrene and fracture were seen only in 2 and 1 animals respectively. Houssain *et al* (1986) also reported 1.1% cases of fractures among surgical conditions in cattle. Arthtritis was observed only in 2 bulls which were in agreement with the findings of Samad (2001) who reported 0.02% cases of arthritis in cattle.

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Reproductive Cases

Balanoposthitis and Orchitis

Balanoposthitis and orchitis were observed in 3.21% and 1.18% cases respectively. Highest percentage of these disease conditions were recorded during winter season (6.85% and 2.05%) as compared to summer (3.85%, 1.10%) and rainy season (0.76% and 0.76%). Herpes virus causing Infectious bovine rhinotracheitis and sudden exposure of new sires to unfamiliar microbial population could play a role in causing balanoposthitis. Orchitis in bulls occur occasionally and one or both scrotal sac may be affected with painful swelling. Although orchitis may be caused by many conditions but animals with orchitis should be screened to rule out brucellosis because it causes sterility in male and affected bulls act as potential spreader of disease through artificial insemination (Radostits *et al.*, 2007).

The study concludes that the major clinical diseases prevalent in bulls are lameness, pyrexia, tick infestation, abscess, wound, inappetance, diarrhea, balanoposthitis and conjunctivitis. Overall prevalence of clinical diseases is higher in rainy season as compared to summer and winter season. Occurrence of fever, wound, and abscess is more in rainy season while tick infestation and diarrhea are more prevalent during summer season. Lameness, balanoposthitis, dermatitis occur more during winter season. Proper planning and programme should be undertaken to prevent and control the occurrence of these clinical diseases in order to minimize the loss of semen production and quality. Further research is required to investigate the predisposing factors and causes of these clinical diseases prevalent in crossbred Frieswal bulls.

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