



ISSN (E): 2277- 7695

ISSN (P): 2349-8242

NAAS Rating: 5.03

TPI 2020; 9(5): 14-17

© 2020 TPI

www.thepharmajournal.com

Received: 13-03-2020

Accepted: 15-04-2020

Javid Ur Rahman

Division of Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana, India

AK Gupta

Division of Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana, India

Saleem Yousuf

Division of Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana, India

Naseer Ahmad Baba

Division of Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana, India

Ekta Rana

Division of Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana, India

Adil Rasool Paray

Division of Livestock Production and Management, ICAR-National Dairy Research Institute, Karnal, Haryana, India

Aashaq Hussain Dar

Department of Livestock Production and Management, CVASc, GBPUAT, Pantnagar, Utrakhnad, India

Sheikh Firdous Ahmad

Division of Animal Genetics and Breeding, ICAR-Indian Veterinary Research Institute, Izatnagar, Bareilly, India

Corresponding Author:

Javid Ur Rahman

Division of Animal Genetics and Breeding, ICAR-National Dairy Research Institute, Karnal, Haryana, India

Effect of season and parity on incidence of udder, calving and uterine disorders of Gir cattle in an organized herd

Javid Ur Rahman, AK Gupta, Saleem Yousuf, Naseer Ahmad Baba, Ekta Rana, Adil Rasool Paray, Aashaq Hussain Dar and Sheikh Firdous Ahmad

Abstract

The present study was aimed to analyze the incidence of udder, calving and uterine disorders in Gir cattle breed and to estimate the effect of season of calving and parity on their incidence. The overall incidence of udder, calving and uterine problems on clinical data basis were 7.12, 12.46 and 8.01 percent, respectively. On Wald Chi-square analysis, the incidence of calving problem decreased significantly ($p<0.05$) with increasing parity number while incidence of uterine disorders significantly increased ($p<0.05$) with increasing parity number of animals. Incidence of dystocia was found to be significantly ($p<0.05$) higher in first parity animals. The incidence of mastitis was significantly ($p<0.05$) higher in summer season as compared to other seasons. Season of calving showed non-significant effect on incidence of udder, calving and uterine disorders.

Keywords: Wald Chi-square analysis, Gir Cattle

1. Introduction

Gir is one of the 42 registered cattle breed of India known for tolerance to stress conditions and resistance to various tropical diseases [1]. Gir cattle are hardy with low incidence of mortality. The milk production potential of Gir cattle is immense with 2000-6000 kg of milk production per lactation and fat percentage ranging from 4.5% to 5% (DAHD Govt. of India). Gaur and Kaushik (2003) reported per day milk yield of calving interval of 4.98 litres and average fat percentage in the milk ranged between 4.69 ± 0.04 and 4.97 ± 0.02 . Gir breed of India has been used in national breeding policy of different countries including USA, Brazil and other Latin American countries (DAHD Govt. of India).

The humped cattle breeds like Gir originating in India, are thought to be the world's oldest domesticated cattle. They were introduced into the United States as early as 1849 for developing Brahman Breeds, by incorporating the Zebu cattle breeds and their germplasm, for flourishing meat industry. In Latin America, several cross breeds have been developed by incorporating the zebu inheritance of Indian cattle breeds like Gir in their native cattle breeds. The finest Indian zebu breeds are now found all over the Brazil after first Gir was imported in Brazil in 1906. However in the native breeding tract India the Gir cattle breed is very rarely to be found and are mostly confined to Government institutional farms.

Milk productivity in animals is affected by increased incidence of udder related disorders. Calving interval and service period are lengthened due to increased incidence of uterine disorders and calving abnormalities. The economics of the farm suffers huge losses with decreased productivity of milking animals and loss of days of animals during lactation in herd due to infliction dairy animal with disorder related to udder and uterus.

There has been only a few studies regarding the incidence of various functional traits in Indian cattle breeds. A study conducted by Oedra (1979) revealed occurrence of only a few cases of reproductive disorders i.e. dystocia, abortion, retention of placenta and prolapse in Gir cattle [2]. The present study was aimed to know the incidence of various udder, uterine and calving abnormalities in Gir cattle and the effect of parity, season of calving and season of year on them. Under udder disorders, incidence of clinical cases of mastitis, teat fibrosis and teat block were calculated. In uterine disorders, incidence of clinical cases of mastitis, endometritis and pyometra were estimated. Calving abnormalities included the clinical cases of dystocia, abortion and retention of placenta.

2. Materials and methods

The present study was carried out on a population of Gir cattle breed maintained at Livestock Research Centre, National Dairy Research Institute (NDRI), Karnal, India. The farm is located at tropical conditions with latitude 29.43° N & longitude 77.2° E coordinates. This farm experiences a minimum temperature and maximum temperature of 10 °C (in winters) and 45 °C (in summers), respectively and annual rainfall of 70 cm. Gir breed was incorporated into the organized cattle herd at NDRI in 2015.

2.1 Data collection and study duration

The present study was undertaken for a duration of three years from January 2015 to December 2017. The data were collected on a total of 89 lactating animals from the record books maintained at Animal Health Complex of ICAR-National Dairy Research Institute (NDRI), Karnal, India. The data were classified based on parity number of animals when inflicted with disorder and season of occurrence of disorder. Out of 89 lactations, 17 animals were in their first parity, 25 animals were in 2nd parity, 19 animals were in 3rd parity and 28 animals were in 4th or above parity when inflicted with disorder. Out of 89 lactations, 30 calvings were in winter season, 21 calvings were in summer season, 12 calvings were in rainy season and 21 calvings were in autumn season [Table 1, 2].

2.2 Statistical analysis

Incidence of different disorders was calculated on percentage basis. The incidence percentage of a specific disorder during the study period was calculated as number of new cases of specific disorder during a given time period over total population at risk during the same time period and multiplied by 100. Chi-square analysis on data were made using R software version 3.6.1. Ultimately, the effect of parity, season of calving and season of year on the incidence of calving, uterine and udder disorders was analyzed.

3. Results

3.1 Incidence of functional disorders in Gir cattle

The overall incidence of udder, calving and uterine problems in Gir based on the clinical data collected (at Livestock Research Centre, NDRI-Karnal) was 7.12, 12.46 and 8.01 percent, respectively. The incidence of overall udder disorders (7.12%) comprised 4.45% mastitis, 0.89% teat block and 1.78% teat fibrosis cases. The calving problems (12.46%) consisted of 2.67% retention of placenta, 8.01% abortion and 1.78% dystocia cases. The uterine problems were summation of 3.56% uterine prolapse, 1.78% metritis and 2.67% endometritis cases [Table 3].

3.2 Effect of non-genetic factors on incidence of functional disorders

Animals' parity number showed significant effect on the incidence of overall calving problems ($p < 0.05$) and overall uterine disorders ($p < 0.05$). Incidence of dystocia was found to be significantly higher in animals in their first parity ($p < 0.05$). Season of year significantly affected the incidence of mastitis ($p < 0.05$) with higher incidence in summer season [Table 4].

4. Discussion

The incidence of overall udder problems observed in Gir cattle was 7.12 percent which is summation of 4.45 percent mastitis, 0.89% teat block and 1.78% teat fibrosis. Keviletsu

and Yadav, [3] reported 26.43% incidence of mastitis in Sahiwal in same organized farm (at NDRI, Karnal, India). These differences were attributable to breed differences, small population size and smaller time-period. Another reason may be lesser selection pressure applied on Gir cattle breed for milk production traits when compared to Sahiwal. Higher incidence of reproductive (calving and uterine) disorders (20-31% in different centres) were reported by Verma *et al.* [4]. Other possible reasons for lower incidence of functional trait disorders in present study include breed differences, farm hygiene, farm management practices, location and climatic conditions which differ from place to place.

The incidence of retention of placenta cases in Gir cattle was 2.67%. This finding was in conformity with Verma *et al.* [4] who reported 1-2% incidence of retention of placenta in cattle maintained at three different veterinary care centres. Getachew and Moges, [5] reported the incidence of retention of placenta in cattle in the range of 0.8-26%.

The Incidence of metritis and endometritis observed were 1.78 and 2.6 percent, respectively. Verma *et al.* [4], reported incidence of endometritis as 2.81, 2.79 and 2.13 percent at T.V.C.C. Baldirai and Haringtonganj, respectively. Our finding was lower than that reported by Le Blanc [6] and Getachew and Moges [5] in cattle. The breed difference in this study may be the main reason as zebu breeds possess lower incidence of diseases, inherit disease resistant genes and also have better adaptability.

The incidence of metritis observed in the present study was 3.56%. Our findings were similar to that of Verma *et al.* [4] who reported the incidence of uterine prolapse in cattle as 3.56%, 2.27% and 1.53% at three different veterinary health centres. However, our findings were higher than that reported by Ahmed *et al.* [7], but lower than that reported by Verma *et al.* [8] in cows. This differences may be due to breed differences, farm managemental practices and environmental condition of these studies.

Parity produced significant effect on the incidence of overall calving problems ($p < 0.05$) and overall uterine disorders ($p < 0.05$). Incidence of dystocia was significantly higher in first parity animals ($p = 0.05$). In the present study, significant effect of parity may be due lesser diameters of reproductive tract during first calving and larger size of foetus. Season of year significantly affected the incidence of mastitis ($p = 0.05$) with higher incidence in summer season. Kulkarni *et al.* [10] reported significant effect of season on clinical mastitis in cattle.

5. Conclusion

The present study revealed that the incidence of calving and uterine disorders are affected by parity and incidence of udder disorders are unaffected by parity. The findings from the present study on functional traits may be helpful in improving the gains of breeding programmes as they have definite effect on productivity of animals.

6. Acknowledgments

The authors are thankful to Director (NDRI) and In-charge Livestock Research Centre and Animal Health Complex, of ICAR- National Dairy Research Institute (NDRI), Karnal for providing necessary data for conducting the study.

7. Disclosure statement

The authors certify that they have no conflict of interest.

Table 1: Type of disorder with date of diagnosis, season of calving, season of year and parity of animal

Animal no	Disease	Date of disorder diagnosed/occurred	Season of calving	Season of year	Parity
2	Abortion	05/10/2016	2	1	4
3	Abortion	03/23/2017	1	1	4
5	Abortion	03/24/2017	4	1	6
7	Abortion	01/02/2017	1	1	4
11	Abortion	05/03/2017	4	2	2
18	Abortion	10/19/2017	4	3	1
47	Abortion	03/23/2017	4	4	1
22	Dystocia	10/10/2018	3	4	1
22	Dystocia	08/01/2017	3	4	1
1	Endometritis	12/25/2016	3	1	5
7	Endometritis	01/16/2017	1	1	5
31	Endometritis	03/09/2017	1	4	4
8	Mastitis	03/26/2017	4	1	4
14	Mastitis	08/26/2017	2	3	3
34	Mastitis	05/19/2016	1	2	1
47	Mastitis	07/17/2016	2	3	2
49	Mastitis	07/22/2016	2	3	4
11	Metritis	05/03/2017	4	2	3
47	Metritis	11/22/2017	4	4	4
4	Uterine Prolapse	01/02/2016	2	1	4
17	Uterine Prolapse	10/11/2017	1	2	3
17	Uterine Prolapse	11/03/2017	1	2	3
51	Uterine Prolapse	10/29/2015	3	4	3
1	Retention of placenta	01/06/2017	3	1	5
2	Retention of placenta	10/05/2016	2	1	5
31	Retention of placenta	03/23/2017	1	4	1
11	Teat block	05/03/2017	1	2	3
12	Teat fibrosis	05/08/2017	1	2	3
2	Teat fibrosis	10/04/2016	3	4	2

Table 2: Classification of Season, and parity of animal

Season of calving		Parity	Code
Month	Season		
December to March	Winter	1 st	1
April – June	Summer	2 nd	2
July to August	Rainy	3 rd	3
September to November	Autumn	4 th and above	4

Table 3: Incidence percent of various udder, calving and uterine disorders in Gir cattle

Disorders	Number of animals affected	Incidence percent
Mastitis/Flakes	5	4.45
Teat block	1	0.89
Teat fibrosis	2	1.78
Overall Udder disorders	8	7.12
Retention of fetal membrane	3	2.67
Abortion	7	6.23
Dystocia	2	1.78
Overall calving abnormalities	12	10.68
Endometritis	3	2.67
Metritis	2	1.78
Uterine Prolapse	4	3.56
Overall Uterine disorders	9	8.01

Table 4: Effects of season of calving, season of year and parity of animal Chi- square (Chi-sq.) values and corresponding P values

Disorders	Effects					
	Parity		Season of calving		Season of year	
	Chi-sq.	P-value	Chi-sq.	P-value	Chi-sq.	P-value
Mastitis	0.22622	0.9732	3.2403	0.356	7.4837	0.04798*
Teat block	3.5393	0.3157	1.9894	0.5746	3.2168	0.3594
Teat fibrosis	2.0705	0.5579	3.1445	0.3699	1.7548	0.6248
Overall Udder disorders	1.1409	0.7672	0.93775	0.8163	4.4973	0.2125
Retention of placenta	2.8867	0.4094	1.5375	0.6737	2.0126	0.5698
Abortion	2.8593	0.4138	3.8306	0.2804	1.4078	0.7037
Dystocia	4.1372	0.04195*	10.531	0.01455*	5.6087	0.1323
Overall calving abnormalities	7.7167	0.04924*	1.7064	0.6355	2.3989	0.4938
Endometritis	6.1022	0.1067	2.9578	0.3982	2.0126	0.5698
Metritis	1.8854	0.5965	4.2923	0.2316	1.7548	0.6248
Uterine Prolapse	6.5968	0.08592	1.9576	0.5812	1.7909	0.6169
Overall Uterine disorders	7.5141	0.0472*	1.1978	0.7535	4.3103	0.2298

* p-value<0.05 (significant)

8. References

1. Gaur GK, Kaushik SN, Garg RC. The Gir cattle breed of India-characteristics and present status. *AGRI*, 2003; 33:21-29.
2. Odedra BA. Calf mortality in Gir cattle. *Indian Journal of Dairy Science*, 1979; 32:105-10.
3. Odedra BA. Calf mortality in Gir cattle. *Indian Journal of Dairy Science*, 1979; 32:105-10.
4. Keviletsu K, Yadav BR. The incidence of mastitis investigated in Sahiwal and Murrah breeds maintained as a closed pedigreed herd in a research institute. *Indian Journal of Animal Sciences*. 2010; 80:467-469.
5. Verma S, Srivastava S, Verma KR, Saurabh, Kumar A, Yadav SK. Incidence of Repeat Breeding in Cows In and Around Kumarganj, Faizabad (Uttar Pradesh), India. *International Journal of Current Microbiology and Applied Sciences*. 2018; 7:4860-4870.
6. Getachew E, Moges N. Major Reproductive Health Disorders in Cross Breed Dairy Cows in Ada'a District, East Shoa. *Ethiopia Global Veterinaria*. 2014; 13(4):444-449.
7. Leblanc SJ. Postpartum uterine disease and dairy herd reproductive performance: A review. *Vet. J.* 2008; 176:102-114.
8. Ahmed, Kawther S Zaher. A Field Contribution on the Relation between Reproductive Disorders and Bovine Viral Diarrhea Virus Infection in Buffalo-Cows American-Eurasia *J Agric. & Environ. Sci.* 2008; 3(5):736-742.
9. Verma HK, Singh G, Sidhu SS. Incidence of reproductive disorders of buffaloes in different zones of Punjab State (India). *Journal of Research, Punjab Agricultural University*. 2003; 40(1):79-81.
10. Kulkarni MD, Khanvikar AV, Bansod RS. Incidence of reproductive disorders in indigenous and crossbreds in an organized farm. *Indian Vet. J.* 2002; 79:1196-1197