



ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2020; SP-9(9): 148-150
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www.thepharmajournal.com

Received: 14-06-2020

Accepted: 20-07-2020

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Prevalence of pneumonia in goats in Durg district of Chhattisgarh state

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Abstract

The present study was conducted to study the prevalence of pneumonia in and around areas of Durg district of Chhattisgarh state. The prevalence was studied on the basis of clinical signs like rise in rectal temperature, bilateral nasal discharge, increased heart rate, increased respiration rate and abnormal lung sounds on auscultation. The prevalence of pneumonia and its correlation with age, sex, housing and season in goats was studied in total number of 900 goats for a period of a year (September, 2017 to July, 2018). The overall prevalence rate of pneumonia in goats recorded after the study was 28.11%. The age-wise prevalence was found highest in between age group of 0-6 month (43.48%) followed by 7-12 month (33.20%) and above 1 year (23.32%). The prevalence of pneumonia was found very slightly higher in female goats (51.8%) as compared to male goats (48.2%). The prevalence was highest during winter (October- January) followed by rainy season (June-September) and least prevalence was observed in summer season (February -May). The prevalence in winter, rainy and summer season was 58.5%, 37.15% and 4.35%, respectively. The prevalence based on the type of housing was observed highest in free ranging (51.78%) followed loose housing (32.02%) and least prevalence was recorded in stalls (16.20%). The study concluded that the overall prevalence of pneumonia in goats in Durg district of Chhattisgarh state was 28.11% and the highest prevalence was recorded in goats of age group between 0-6 months, more commonly during winter season and when the type of housing was mainly free ranging.

Keywords: Age, goats, housing, pneumonia, prevalence, season and sex

Introduction

In India, goat is one of the most important livestock which provides securities to millions of marginal and small farmers and agricultural laborers (Kumar, 2007) [7]. Goat is one of the very useful livestock as it have short generation interval, high prolificacy, capacity to survive on sparse from vegetation and easy adaptation to a wide range of climatic conditions (Sakthivel *et al.*, 2012) [10]. Pneumonia among the various respiratory diseases is a leading cause of economic losses in the ruminant industry throughout the world (Yener *et al.*, 2009) [12]. The predisposing factors leading to pneumonia are exposure of animal to damp place and cold environment, housing in an ill ventilated room, exertion due to extensive work, long transport, severe hunger, malnutrition, chronic under-nutrition, exposure to cold waves during month of winters, sudden changes in the weather, cardiac weakness, recumbency for a long period of time, other debilitating diseases, inhalation of dust, irritating vapors etc (Islam *et al.*, 2006) [3]. Factors like climatic variations, immune status, nutrition and housing might also lead to the occurrence of caprine pneumonia caused by the bacterial agents (Pinheiro *et al.*, 2000 and Kumar *et al.*, 2004) [9, 5]. It is a fact that small scale and marginal landless farmers of Chhattisgarh state are keeping goats for their livelihood. Disease like pneumonia may cause high rate of mortality thereby causing huge financial loss to goat keepers. Considering the above facts present study was aimed to study the prevalence of pneumonia in goats in and around areas of Durg district of Chhattisgarh state.

Material and methods

The prevalence was studied in different goat farms in and around Durg, goat keepers in nearby villages, goat unit of College of Veterinary Science & A.H. and goat farm of KVK, Anjora, Durg, (Chhattisgarh) for a period of a year (September, 2017 to August, 2018). During this study, a total number of 900 goats were screened; out which 253 goats were diagnosed to be positive for pneumonia on the basis of clinical examination and isolation of bacteria from nasal swabs of randomly screened goats. The clinical signs includes high rise in rectal temperature, serous, mucous or mucopurulent nasal discharge and cough,

Moist and crackles rales on auscultation of the lungs. The recorded data and information were statistically analyzed to study the prevalence of disease in this area and its correlation with age, sex, housing and season in goats.

Age wise prevalence of pneumonia in goats

The prevalence of pneumonia in goats of different age groups (0-6 months, 7-12 months and above 1 year) was studied during the study period.

Sex-wise prevalence of pneumonia in goats

The prevalence of pneumonia in both sexes (male and female) was studied during the study period. The prevalence of pneumonia in both sexes was then compared.

Prevalence on the basis of type of housing

The prevalence was studied according to different types of housing used to keep the goats in nearby village areas. The different type of housing in this study included loose housing, free ranging (night shelter only) and stalls. The type of housing was studied in nearby areas where pneumonic goats were found during study period.

Seasonal prevalence of pneumonia in goats

The seasonal prevalence of pneumonia in goats was studied during the study period. The seasonal prevalence was investigated by screening and presence of clinical signs and collecting the nasal samples in three different seasons i.e. rainy (June-September), winter (October- January) and summer (February- May) season during the study period.

Result and discussion

Overall Prevalence

The overall prevalence of pneumonia in goats was 28.11% (table no.1). The prevalence may be attributed to exposure of animals to environmental stressors, commonly followed extensive system of goat rearing, poor managerial practices i.e. malnutrition, overcrowding which increases susceptibility to diseases. The disease is more common in young goats which also revealed the susceptibility to pneumonia especially the devastating effect of PPR virus. This further concludes that complicated PPR is commonly found in goats (Lawal *et al.*, 2011) [7]. All these observations also claim the fact that pneumonia is essentially triggered by a sudden exposure to any stressful conditions or by any initial infection with certain respiratory viruses (Jasni *et al.*, 1991) [4].

Age wise prevalence

It was observed during the study period that the prevalence of pneumonia in different age groups i.e. 0-6 months, 7-12 months and above 1 year was 48.22%, 33.20% and 18.58%, respectively (table no.2). The incidence was found to be highest in goats between 0-6 months of age followed by goats between 7-12 months of age. Comparatively, the prevalence rate was lower in goats above 1 year of age. Similar observations were also reported by Islam *et al.* (2006) [3] and Kumar *et al.* (2004) [5]. Young goats requires additional nutrient supplement for body weight gain and sexual maturity and therefore, due to malnutrition they become more prone to diseases (Sarkar and Islam, 2011) [11]. Young goats are also more susceptible due to absence of maternal antibodies. Adult goats are not readily prone to pneumonia but stress and secondary bacterial infection may predispose them to pneumonia.

Sex wise prevalence

It was observed during the study that the prevalence of pneumonia in female goats was slightly higher as compared to the male goats. The observed prevalence rate in female and male goats was 51.8% and 48.2% respectively (table no.3). Momin *et al.* (2014) [8] have also reported higher prevalence of pneumonia in female goat (23.0%) as compared to male goat (12.0%). However, Islam *et al.* (2006) [3] observed that the incidence of respiratory disorder was higher in male (70%) as compared to female (30%). The higher prevalence in females observed in this study might be due to the breeding policy of goat keepers whereby they prefer to keep 10-15 females against every male goat.

Season wise prevalence

In terms of seasonal prevalence of pneumonia in goats, it was observed that highest prevalence was reported in winter season (October- January), followed by rainy season (June-September) and comparatively lowest incidence in summer season (February- May) (table no.4). The seasonal prevalence rate was 19.16%, 4.35% and 75.89% in rainy, summer and winter season respectively. The findings of our study corroborate with findings of Kumar *et al.* (2004) [5] and Dohare *et al.* (2013) [2]. The prevalence rate varied with season and this variation seemed to appear due to fluctuations in temperature in different season which acted as major determinant of pneumonia in goats (Kumar *et al.*, 2004) [5].

Prevalence based on type of housing

The prevalence based on the type of housing was observed highest in free ranging (51.78%) followed by loose housing (32.02%) and least prevalence installed goats (16.20%) (table no. 5). Islam *et al.* (2006) [3] have also reported that goats remaining on free range (night shelter only) are more vulnerable to pneumonia (50%) while those housed in loose and stall are less prone to pneumonia (35% and 15%). In semi intensive rearing systems, increased stress level has been reported to occur on animal which leads to higher disease incidence and mortality (Chowdhary *et al.*, 2002) [1]. The highest prevalence of pneumonia in free ranging goats might be due to poor provision of any protection against various stressors like storm, wind and extreme hot/cold environment.

Table 1: Overall prevalence of pneumonia in goats in and around Durg

Total number of goats examined	900
Number of positive goats	253
Prevalence percentage	28.11

Table 2: Age wise prevalence

Age group	No. of positive goats	Prevalence percentage
0-6 months	110	43.48
7-12 months	84	33.20
Above 12 months	59	23.32

Table 3: Sex wise prevalence

Sex group	No. of positive goats	Prevalence percentage
Male	114	48.2%
Female	139	51.8%
Total	253	100%

Table 4: Season wise prevalence

Seasons	No. of positive goats	Prevalence percentage
Rainy	50	37.15
Summer	11	4.35
Winter	192	58.5

Table 5: Prevalence based on type of housing

Type of housing	No. of positive goats	Prevalence percentage
Loose housing	81	32.02
Free ranging (shelter only at night)	131	51.78
Stalls	41	16.20

Conclusion

From this study, we can conclude that the overall prevalence of pneumonia in goats in Durg district of Chhattisgarh state was 28.11% and the prevalence was recorded highest in goats of between 0-6 month of age group which were mostly reared in free ranging housing type and more commonly during winter.

Acknowledgement

The authors are thankful to the Dean, College of Veterinary Science & Animal Husbandry, Anjora, Durg, (C.G.) for providing the facilities for carrying out the research work.

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