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RESEARCH ARTICLE

SEROPREVALENCE OF CONTAGIOUS AGALACTIA IN GOATS

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ABSTRACT

The present work was aimed to study the seroprevalence of contagious agalactia in goats. For this study, total 705 lactating goats belonging to organized and unorganized sectors of in and around areas of Jabalpur (M.P.) were screened by slide agglutination test over a period of 12 months i.e. from April 2014 to March 2015. The overall seroprevalence of contagious agalactia was 9.50%. Seroprevalence of contagious agalactia in organised goat farms was observed higher (19.65%) than in unorganised sector of goatry (4.62%). The age wise seroprevalence of contagious agalactia revealed a non-significant variation among various age groups. However, breed wise seroprevalence of contagious agalactia showed significant variation ($p<0.05$) among various breeds of goats but comparatively lower prevalence was observed in those breeds of which were reared in unorganized sector.

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INTRODUCTION

Among various goat diseases, mycoplasmal infections are one of the important infections which result in significant losses to goat industry. Clinical contagious agalactia often lacks pathognomonic characteristics and symptoms can be shared by other clinically significant infections. As a consequence, the diagnosis of an acute caprine mycoplasmal infection can be easily misinterpreted (DaMassa *et al*., 1992). The economic impact of the disease lies in the loss of milk production and sometimes abortions in dams. In the countries where sheep and goat dairy products are important foods as commercial commodities, contagious agalactia is a serious problem in terms of veterinary health and socio-economic impacts (Nicholas, 1998). Asymptomatically infected goats can shed mycoplasma for many years after infection, therefore, they play a very important role in the epidemiology of the disease, making unsuccessful both prophylaxis and eradication programs. Although the significance of contagious agalactia is well known but a meager work regarding establishment of prevalence of contagious agalactia in goats in Madhya Pradesh has been carried out.

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So in view of the above facts, this endeavor was aimed to study the seroprevalence of intramammary contagious agalactia in lactating goats in and around Jabalpur.

MATERIALS AND METHODS

To study the seroprevalence of intramammary contagious agalactia , a total of 705 lactating goats belonging to both organised and unorganised sectors, in and around areas of Jabalpur district of Madhya Pradesh were screened over a period of 12 months i.e. from April 2014 to March 2015. All the goats were clinically examined for the presence of symptoms like swelling of udder, abnormal secretion and/or enlargement of supramammary lymph nodes. The seroprevalence of contagious agalactia was conducted by using slide agglutination test (SAT). For performing SAT, the coloured antigen was procured from the Department of Bacteriology and Mycology, Division of Indian Veterinary Research Institute (I.V.R.I.), Izatnagar (U.P) and serum samples were harvested by collecting about 3 ml of blood aseptically from the jugular vein of lactating goats in clot activator vaccutainers and allowing to stand for about two hours. The serum thus collected was frozen at –20°C until further use. The SAT was performed as per the method described by Roy *et al*. (2010). Precisely, one drop (0.03 ml) of test serum was taken on a clean grease free glass slide by

micropipette. The antigen bottle was shaken well to ensure homogenous suspension and one drop (0.03 ml) of whole cell coloured antigen was added to the drop of test serum. The antigen and serum were mixed thoroughly with a tooth pick and the slide was rotated for 1 to 2 minutes. The result was read after 2 to 3 minute. Positive result was indicated by definite clumping while in case of negative reaction, mixture remained homogeneous without formation of any clumps. Overall seroprevalence of contagious agalactia was calculated by dividing the number of positive samples by the total number of samples. Age wise and breed wise prevalence were calculated by category wise dividing the number of positive samples by the total number of samples (Thrusfield, 2004). Analysis of data of prevalence studies was done by Chi square test.

RESULTS AND DISCUSSION

Overall Seroprevalence

In the present investigation, the overall seroprevalence of contagious agalactia during the study period i.e. from April 2014 to March 2015 was found to be 9.50% in lactating goats. Similar findings were recorded by Srivastava and Singh (2000) who observed 4.97% prevalence of mycoplasma antibodies in goats of Uttar Pradesh. Similarly, Ramdev *et al.* (2008) recorded a seroprevalence of 4.44% in sheep and 5.02% in goats of Himachal Pradesh by using agglutination test. However, Hadush *et al*. (2009) recorded comparatively higher seroprevalence of 32.68 per cent in goats in Ethiopia. However, the variation in the prevalence rates of contagious agalactia of present study with previous studies might be attributed to the fact that the diagnostic tests varied between the different studies previously conducted. Moreover, there may be difference in managemental conditions, climate, study design and screening methods used.

Seroprevalence of contagious agalactia in organised and unorganised goatry

A significant variation was noticed in the seroprevalence with respect to rearing pattern of goatry i.e. seroprevalence of contagious agalactia in organised goat farms was observed higher (19.65%) than the seroprevalence in unorganised sector of goatry (4.62%) (Table 1).

Table 1. Seroprevalence of contagious agalactia in organized and unorganized goatry

S.No.	Sector/ Rearing Pattern	Number screened	Number positive	Prevalence (%)
1	Organized goatry	229	45	19.65
2	Unorganized goatry	476	22	4.62
	χ^2=32.144	df =1	p=0	

Similar findings were reported by Nicholas *et al.* (1982), Perreau (1984) and Kinde (1994) who reported that intensive rearing system of goats resulted in hyperacute and acute forms of mycoplasma infections. It might be due to the reason that contagious agalactia is a highly contagious disease which spreads by ingestion of feed, water or milk contaminated with infected milk, urine, faeces, nasal, ocular and genital discharges. So, when animals are reared under intensive system, they come in close contact with each other resulting in development of clinical form of infection while, traditional extensive system of rearing resulted only in sporadic cases of the disease (Bergonier *et al*., 1997).

Age wise seroprevalence of contagious agalactia

The age wise seroprevalence of contagious agalactia revealed a non-significant variation among various age groups but highest prevalence of 13.12% was observed in the goats of above 4 years of age followed by 9.34% in goats of 3 to 4 years of age and lowest prevalence of 7.42% in goats of 2 to 3 years of age (Table 2).

Table 2. Age wise seroprevalence of contagious agalactia in lactating goats

S.No.	Age group	Number screened	Number positive	Prevalence (%)
1	2-3 years	256	19	7.42
2	3-4 years	289	27	9.34
3	Above 4 years	160	21	13.12
	χ^2 = 3.0457	df = 2	p = 0.218092	

Although scanty literature is available in regard to age wise prevalence but direct association of age with the prevalence of contagious agalactia in the present study might be attributed to the fact that female goats in the age group of 2 to 3 years are not routinely exposed to causal agent, since most of them are in their first lactation (Egwu *et al*., 2001). Lactation may facilitate multiplication of mycoplasmas and their clinical manifestation in the udder. Hence, subsequent kidding and lactation has been shown to increase the chances of infection (Gross *et al*., 1978).

Breed wise seroprevalence of contagious agalactia

The breed wise seroprevalence study of contagious agalactia in lactating goats revealed a highest prevalence of 34.69% in Barbari breed followed by 21.43% in Black Bengal breed, 17.48% in Sirohi breed, 9.09% in Jamunapari breed and lowest prevalence of 2.77% in non-descript breed of goats.

Table 3. Breed wise seroprevalence of contagious agalactia in lactating goats

S.No.	Breed	Number screened	Number positive	Prevalence (%)
1	Barbari	49	17	34.69
2	Black Bengal	28	06	21.43
3	Jamunapari	88	08	09.09
4	Sirohi	143	25	17.48
5	Non descript	397	11	02.77
	χ^2 = 54.3346	df = 4	p <0.00001	

The breed wise seroprevalence of contagious agalactia showed significant variation ($p<0.05$) among various breeds of goats (Table 03). As contagious agalactia is considered as highly contagious disease for which the variability between individuals or breeds is of little significance. Moreover, Bergonier *et al*. (1997) have reported that firm conclusions cannot be drawn regarding the variations in susceptibility attributable to breed. The variability in breed wise prevalence

in the present study is incidental and might be due to the variability in the number of samples examined in each category. However, comparatively lower prevalence was observed in the breeds of goats i.e. Jamunapari and non- descript breeds which were reared in unorganized sector. The results of present study indicated the endemicity of contagious agalactia in the goats in and around areas of Jabalpur. In this study, preliminary screening for contagious agalactia was done with the help of SAT which is a serological method. As the serological tests are very useful in supporting the diagnosis based on laboratory examination and are of value particularly in epidemiological investigation (Madanat *et al.,* 2001). Hence, SAT being simple, easy to perform, less time consuming and requiring less technical knowledge can be used effectively for preliminary screening of a large population for contagious agalactia.

REFERENCES

Bergonier, D., Berthelot, X. and Poumarat, F. 1997. Contagious agalactia of small ruminants: current knowledge concerning epidemiology, diagnosis and control. *Scientific and Technical Review of the Office International des Epizooties,* 16 (3): 848-873.

DaMassa, A. J., Wakenell, P. S. and Brooks D. L. 1992. Mycoplasmas of goats and sheep. *Journal of Veterinary Diagnostic Investigation,* 4:101-113.

Egwu, G. O., Ameh, J. A., Aliyu, M. M. and Mohammed, F. D. 2001. Caprine mycoplasmal mastitis in Nigeria. *Small Ruminant Research*, 39: 87 – 91.

Gross, S. J., Pollak, E. J., Anderson, J. G. and Torkel, D. T. 1978. Incidence and importance of subclinical mastitis in sheep. *Journal of Animal Science*, 46: 1.

Hadush, B., Eshetu, L., Mengistu, W. and Hailesilassie, M. 2009. Seroprevalence of contagious caprine pleuropneumonia in Kefta Humera, Alamata (Tigray) and Abaala (Afar), Northern Ethiopia. *Tropical Animal Health Production*, 41: 803-806.

Kinde, H., DaMassa, A. J., Patricia, S. and Wakenell, R. P. 1994. Mycoplasma infection in a commercial goat dairy caused by *Mycoplasma agalactiae* and *Mycoplasma mycoides* subsp. *mycoides* (caprine biotype). *Journal of Veterinary Diagnostic Investigation*, 6:423-427.

Madanat, A., Zendulkova, D. and Pospisil, Z. 2001. Contagious agalactia of sheep and goats: A review. *Acta Veterinaria Brunensis*, 70: 403–412.

Nicholas, J. B., Chauchef, S., Parbelle, M. and Ferial, M. L. 1982. Les mycoplasmoses caprines vues par un laboratoire de diagnostic. *Revue of Medicine Veterinary*, 133:423-426.

Nicholas, R. A. J. 1998. The veterinary significance of mycoplasmas. *In*: Miles, R.J; Nicholas, R (Eds.): Methods in Molecular Biology Mycoplasma protocols, Humana Press, Totowa, USA, pp. 17 – 23.

Perreau, P. 1984. Les mycoplasmoses de la chèvre. In Les maladies d e la chèvre (P. Yvore & G. Perrin, eds). Niort, France, 9-11 October. Les colloques de l'Institut National de la Recherche Agronomique, Paris, 245-256.

Ramdeva, J., Sharma, M., Katoch, V. C., Dhar, P. and Chahota, R. 2008. Seroprevalence of Mycoplasmosis in sheep and goats of H.P. *Indian Journal of small Rumin*ants, 14: 32.

Roy, A., Kumar, P. and Bhanderi, B. B. 2010. Detection of *Mycoplasma capri* antibodies in goats of Gujarat state. *Veterinary World*, 3(10):471-472.

Srivastava, N. C. and Singh, V. P. 2000. Annual Report, Division of Bacteriology and Mycology, IVRI, Izatnagar, India.

Thrusfield, M. 2004. Veterinary epidemiology. 3rd Edn., Blackwell Publishing, Oxford, England, pp. 53.

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