

PREVALENCE OF KIDNEY DISEASES IN SLAUGHTERED SHEEP AND GOATS IN JAMMU REGION

Sahil Dutta, Shafiqur Rahman*, Shagufta Azmi, and Navdeep Kour

Division of Veterinary Pathology

Faculty of Veterinary Sciences and Animal Husbandry

Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu, R.S. Pura, Jammu -181102

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ABSTRACT

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The study was conducted in government recognized and unorganised slaughter houses of sheep and goats in Jammu region from the month of July 2013 to June 2014. In the present study, 300 kidney samples of sheep (150) and goats (150) were collected from four (04) abattoirs for determining the prevalence of kidney affections. The prevalence of kidney affections in sheep and goats was found to be 18.00% and 14.67%, respectively with overall prevalence of 16.33%. However, sheep were found to be more infected as compared to the goats. Female sheep and goats were more infected as compared to the male sheep and goats. Adults animals more than 25 month age were more infected with kidney diseases as compared with the young animal of 6-12 month age and 13-24 month of age. The month wise prevalence of kidney diseases irrespective of species revealed highest i.e. 40% in the month of June while the least prevalence i.e. 12% was observed in the months of September, October, November, December, January and March. Season wise prevalence of kidney diseases irrespective of species revealed highest 19% during summer season followed by 18.67% in monsoon season, 13.33% in winter and 12% in post-monsoon season. The highest incidence of occurrence of renal infarction was found to be 28.57% followed by nephritis 26.53%, renal haemorrhages 20.40%, renal amyloidosis 14.28% and hydronephrosis 10.20%.

Key words: Sheep, Goats, Kidney diseases.

INTRODUCTION

Sheep and goats as food animals act as valuable asset of a nation. The population of sheep and goats in Jammu and Kashmir state is 24.52 lacs and 20.68 lacs, respectively. The sheep breeds of India are mainly confined to northern temperate region (Jammu and Kashmir, Himachal Pradesh and hilly part of Uttar Pradesh). Each year a significant economic loss results from mortality, poor weight gain, condemnation of edible organs and carcasses at slaughter. This production loss in the livestock industry is estimated at more than 900 million USD annually (Jobre et al., 1996). Renal disease is not uncommon in food animals and information resulting from abattoir data is a

good source for evaluation and monitoring of renal diseases in livestock (Lari, 2007).

Keeping in view the above facts, prevalence of kidney affections in sheep and goats were studied so that it could provide preliminary data for monitoring kidney disease and a useful baseline for future comparison.

MATERIALS AND METHODS

A cross-sectional study was carried out from July 2013 to June 2014 in order to investigate the prevalence of kidney diseases in slaughtered sheep and goats. The study was conducted by collecting 300 kidney samples of sheep and goats in and around Jammu region from Government

*Corresponding author: Email: srahmanskuastj@gmail.com

recognized abattoirs at Gujjar Nagar and Dogra hall and unorganised slaughter houses at Bishnah and Nagrota.

Ante mortem examination: After conducting a detailed ante mortem examination, the male and female sheep (150) and goats (150) were grouped into different categories of age as young and adults based on dentition and a questioner survey from the workers in the abattoirs (Suriho *et al.*, 2011).

Post mortem examination: Kidney samples of sheep and goats collected from the two areas were examined for the presence of kidney affections such as infarction, cysts, congestion, calculi, fibrosis and other pathological conditions (Jubb *et al.*, 2007). The carcasses included in this study were inspected carefully by visual examination. Infected organs were transported to the laboratory at Division of Veterinary Pathology, R.S.Pura, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu (SKUAST-J).

RESULTS AND DISCUSSION

1. Prevalence of kidney diseases in slaughter houses:

The present study was conducted in sheep and goats slaughtered in government recognized and unorganised slaughter houses in Jammu region. Among the two abattoirs, sheep and goats slaughtered under government recognized and unorganised abattoir showed 17% and 15% kidney infection, respectively (Table 1). The prevalence of kidney diseases was also found to be responsible for condemnation of kidneys. This corroborated with earlier reports by few workers in different slaughter house surveys on kidney diseases in slaughtered food animals. Lari (2007) reported 5.4% total kidney condemnation rate in cattle from Shiraj abattoir, south of Iran during 1999-2004. Woube, (2008) reported 27.5% kidney infection in 32/229 slaughtered animals from Helimex, Luna

and Modjo modern Export slaughter houses. The organs of the cattle affected at the Zaria abattoir in Northern Nigeria showed 0.1% kidney affection in cattle (Ogbaje *et al.*, 2012). The prevalence of kidney affections might be due to the injury by various bacterial or viral agents, consumption of certain irritant substances or poisons or during excretion of metabolic end products, regulation of acid-base balance, and maintenance of extracellular fluids.

1.1. Species wise prevalence of kidney diseases in sheep and goats

Species wise prevalence of kidney affections in sheep and goats has been depicted in Table 2. The prevalence of kidney affections in sheep and goats was found to be 18.00% and 14.67%, respectively. Overall prevalence of kidney affections in both the species were found to be 16.33%. However, the prevalence of kidney diseases in sheep was found to be more than goats. The present observation is compatible with that of 5.4, 1.1 and 2.3% of kidney infection in cattle, sheep and goats, respectively in the study conducted by Lari (2007). Jibat *et al.* (2008) reported 6.5% and 7.1% kidney affection in sheep and goats. However, in the present study the prevalence of kidney diseases in sheep was found to be more than goats. This might be due to the high number of sheep brought to the abattoir as compared to the goats, as, the meat of goats are less preferable in Jammu markets.

1.2. Age and sex wise prevalence of kidney diseases in sheep and goats

Age and sex wise prevalence of different kidney diseases of sheep and goats has been shown in Table 3. The prevalence of kidney affections in sheep and goats at the age of 6-12 months were included renal haemorrhages (8%, 4%), renal infarction (4%, 6%) and renal amyloidosis (0%, 2%). At the age of 13-24 months, nephritis (4%, 2%), renal infarction (6%, 6%), renal haemorrhage (4%, 4%) and renal amyloidosis (0%, 2%) were

recorded. In the age above 25 months, nephritis (12%, 8%), hydronephrosis (6%, 4%) and renal amyloidosis (4%, 6%) were recorded. This finding corroborated with the findings of earlier workers. Jibat et al. (2008) reported kidney affection in sheep and goats in young and adult animals at 4.6%, 7.9% and 3.9%, 9.5%, respectively. Since the damage to the kidney occurs slowly over several months to years, a higher infection rate in older animal could be expected.

The maximum prevalence of nephritis in sheep and goats was found at 25 month and above and it was found to be 4% in males and 8% in females and in goats it was 4% in males and females. The maximum prevalence of hydronephrosis in sheep and goats was found at 25 months and above and in sheep it was found to be 2% in males and 4% in females and in goats it was 2% in males and females. In sheep, the prevalence of renal amyloidosis was found to be 4% at 25 months and above age, while in goats it was found to be 2, 2 and 6 % at 6-12, 12-24, and 25 month and above age groups, respectively. In the present study, female animals were found to be more infected than male animals in both species. Higher infection rate in the females than the males could be attributed to hormonal changes. Further, the females generally get more attention in the hands of farmer on account of economic reasons and only those experiencing problems with their health and production are usually culled while it is a standard production procedure for males to be eliminated at an early age for meat purpose. A change of physiologic condition during the lactation, stress of pregnancy and lack of proper nutrition for the production and due to long time exposure of the animals to disease entity and their heavy grazing in submerged areas might be the another causes of greater prevalence rate in female.

1.3. Month wise prevalence of kidney diseases in sheep and goats

The overall prevalence of kidney diseases throughout the year was found to be

16.33% (Table 4). The month wise prevalence of kidney diseases irrespective of species revealed highest i.e. 40% in the month of June while the least prevalence i.e. 12% was observed in the months of September, October, November, December, January and March. Maximum cases of nephritis and hydronephrosis were observed in the month of June. Similarly, maximum cases of renal amyloidosis were observed in the month of January while one case of renal haemorrhages were recorded in each month except June through out the study. The present finding on the month wise and season wise prevalence of kidney affections in sheep and goats in Jammu region are of much significance from the economic and pathological point of view as very little documented information is available on this aspect (Braun et al., 2008). Thus, the findings of current study could provide preliminary base line data for future monitoring of kidney diseases in small ruminants and a useful base line for future comparison, disease diagnosis and control strategies.

1.4. Season wise prevalence of kidney diseases in sheep and goats

Season wise prevalence of kidney diseases in sheep and goats have been depicted in Table 5. Season wise prevalence of kidney diseases irrespective of species revealed highest 19% during summer season (Mar.–June 2014) followed by 18.67% in monsoon season (July–Sept. 2013), 13.33% in winter (Dec.- Feb. 2014) and 12% in post-monsoon season (Oct.-Nov. 2013). Lari (2007) also reported seasonal variation in total kidney rejection and condemnation due to nephritis in the months of July- September followed by Oct-Dec, April- June, March in cattle, sheep and goats and reported non significant seasonal pattern for cattle and sheep and a significant seasonal pattern in goats for kidney affections. This might be due to slaughter of greater portion of the sheep and goats, usually belonging to tribal people, near the end of spring and in the early of summer. At this time, shepherds send old sheep and goats to the

abattoir, as these animals are usually thinner and less efficient and probably infected with kidney disorders.

1.5. Prevalence of Pathological conditions

Out of total 300 animals, 49 animals i.e. sheep (27) and goats (22) were found to be affected by different pathological conditions. The highest incidence of occurrence of renal infarction was found to be 28.57% followed by nephritis 26.53%, renal haemorrhages 20.40%, renal amyloidosis 14.28% and hydronephrosis 10.20%. Similarly, this corroborated with the findings of earlier workers. Lari (2007) reported nephritis in 3.4%, 0.7%, 0.37% in cattle, sheep and goats, respectively, and he had observed that in cattle and sheep, there was significant decline in prevalence of nephritis and total kidney condemnation while in goats nephritis specific kidney condemnation was decreased. Jibat *et al.* (2008) reported nephritis

as the major pathological lesion accounting for 48.4%. Similarly, Woube (2008) observed nephritis as the principal cause for kidney condemnation in both species.

CONCLUSION

The prevalence of kidney affections in sheep and goats was found to be 18.00% and 14.67%, respectively with overall prevalence of 16.33%. However, sheep were found to be more infected as compared to the goats. Adult animals more than 25 month age were more infected with kidney diseases as compared with the young animal. Irrespective of species, highest prevalence i.e. 40% was found in the month of June and in summer season. The highest incidence of kidney affection included renal infarction 28.57% followed by nephritis 26.53%, renal haemorrhages 20.40%, renal amyloidosis 14.28% and hydronephrosis 10.20%.

Table 1: Prevalence (%) of kidney diseases of sheep and goats in Govt. recognized and unorganised abattoirs/slaughter houses in Jammu (N=300)

Slaughter house	Areas	Total no. of kidney samples examined	Infected kidney samples	Total no. of infected kidney samples	Per centage of infection
Govt. recognized abattoirs	Dogra hall	100	16	34	17
	Gujjar nagar	100	18		
Unorganised abattoirs	Nagrota	50	08	15	15
	Bishnah	50	07		
	Total	300			

Table 2: Species wise prevalence (%) of kidney diseases in sheep and goats (N= 300)

Diseases	Sheep (N=150)		Goats (N=150)		Total (N=300)	
	n	Prevalence (%)`	n	Prevalence (%)`	n	Prevalence (%)`
Kidney affections	27	18.00	22	14.67	49	16.33

N= Total number of kidney samples examined, n =total number of infected kidney samples, P (Prevalence %) = n/N X100.

Table 3: Age and sex wise prevalence (%) of kidney diseases in sheep and goats (N= 300).

Age groups	No. of carcasses examined	No. of infected Male: Female	Sheep (150)						Goats (150)					
			Number of infected kidney samples (%)						Number of infected kidney samples (%)					
			Male	Female	Total	%	Male	Female	Total	%	Male	Female	Total	%
6-12 month	50	2: 4	01(Renal haemorrhage)	03 (Renal haemorrhage)	04	8	01(Renal haemorrhage)	01(Renal haemorrhage)	02	2	01 (Renal haemorrhage)	02	4	
			01(Renal infarction)	01(Renal infarction)	02	4	01(Renal infarction)	01(Renal infarction)	02	2	02 (Renal infarction)	01 (Renal amyloidosis)	03	6
13-24 month	50	2: 6	01 (Nephritis)	01 (Nephritis)	02	4	01(Renal infarction)	01(Renal infarction)	02	2	02 (Renal infarction)	03	6	
			01 (Renal infarction)	03 (Renal infarction)	04	6	01(Renal haemorrhage)	01(Renal haemorrhage)	02	2	01 (Nephritis)	01(Renal amyloidosis)	02	4
25 month above	50	4: 9	02 (Nephritis)	04 (Nephritis)	06	12	02 (Nephritis)	02 (Nephritis)	04	4	02 (Nephritis)	04	8	
			01(Hydronephrosis)	02 (Hydronephrosis)	03	6	01(Hydronephrosis)	01(Hydronephrosis)	02	2	01(Hydronephrosis)	01(Hydronephrosis)	02	4
			01(Renal amyloidosis)	01 (Renal amyloidosis)	02	4	01(Renal amyloidosis)	01(Renal amyloidosis)	02	2	02 (Renal amyloidosis)	03	6	
			02 (Renal infarction)	02 (Renal infarction)	04	4								

Table 4: Month wise prevalence (%) of kidney diseases in sheep and goats (N= 300)

Month	Number of animals examined	Number of infected kidney samples	(%)
July (2013)	25	02 (Nephritis), 01 (Hydronephrosis), 01 (Renal amyloidosis), 01 (Renal haemorrhages), 02 (Renal infarction)	28
August	25	02 (Nephritis), 01(Renal haemorrhages), 01 (Renal infarction)	16
September	25	01 (Nephritis), 01 (Hydronephrosis), 01 (Renal infarction)	12
October	25	01 (Renal amyloidosis), 01 (Renal haemorrhage), 01 (Renal infarction)	12
November	25	01 (Nephritis), 01 (Renal haemorrhages), 01 (Renal infarction)	12
December	25	01 (Nephritis), 01 (Renal haemorrhages), 01 (Renal infarction)	12
January (2014)	25	02 (Renal amyloidosis), 01 (Renal infarction)	12
February	25	01 (Renal haemorrhages), 02 (Renal infarction), 01 (Renal amyloidosis)	16
March	25	01 (Renal amyloidosis), 01 (Renal infarction), 01 (Renal haemorrhage)	12
April	25	01 (Nephritis), 01 (Renal haemorrhage), 01 (Renal infarction)	12
May	25	01 (Nephritis), 01 (hydronephrosis), 01 (Renal haemorrhages) 01 (Renal amyloidosis)	16
June	25	04 (Nephritis), 02 (hydronephrosis), 04 (Renal infarction)	40
Total	300	49	16.33

Table 5: Season wise prevalence (%) of kidney diseases in sheep and goats (N= 300)

Season	No. of samples	No. of infected kidney samples	(%)
Monsoon (July-Sept. 2013)	75	05 (Nephritis), 02 (Renal haemorrhage), 02 (Hydronephrosis), 01(Renal amyloidosis), 04 (Renal infarction)	18.67
Post-monsoon (Oct.-Nov. 2013)	50	01 (Nephritis), 02 (Renal haemorrhage), 02 (Renal infarction), 01 (Renal amyloidosis)	12.00
Winter (Dec.-Feb. 2014)	75	01 (Nephritis), 02 (Renal haemorrhage), 03 (Renal amyloidosis), 04 (Renal infarction)	13.33
Summer (Mar.-June 2014)	100	06 (Nephritis), 03 (Hydronephrosis), 01 (Renal amyloidosis), 03 (Renal haemorrhage), 06 (Renal infarction)	19.00

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