International Journal of Chemical Studies

P-ISSN: 2349–8528
E-ISSN: 2321–4902
IJCS 2019; 7(2): 1581-1583

Received: 01-01-2019
Accepted: 05-02-2019

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Pathomorphological & haemato-biochemical studies on oral tumors in digestive tract of sheep (*Ovis aries*) in southern region of Rajasthan

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Abstract
The present study was carried out from January 2017 to June 2018. During this period a total number of 1050 sheep digestive tract samples, irrespective age groups, sex and breeds were examined. Out of these 674 representatives of samples of digestive tract of sheep showing gross lesions were further examined histopathologically. The major tissue specimens for proposed investigation collected from carcasses of sheep irrespective of sex, age groups and breeds from slaughter house of various districts of southern Rajasthan. Overall occurrence of oral tumors in digestive tract was recorded in 7 (1.05 percent) out of 674 cases. Occurrence of different types of tumor recorded as oral fibroma, squamous cell carcinoma and tongue adenoma 0.45 percent (3/674), 0.30 percent (2/674) and 0.30 percent (2/674) respectively. Tumors were confirmed with histological examination. Haematobiochemical parameters in all tumour conditions did not reveal any significant change.

Keywords: histopathology, occurrence, oral tumor, sheep

1. Introduction
Livestock sector includes animal husbandry which plays an important and integral role in the national wealth and also in the socio-economic progress of the country. A most number of farmers in India depend on animal husbandry for their livelihood. Ruminants mainly buffaloes, cows, sheep and goat occupy an important place in the livestock economy of Asia where they are reared for milk, meat, wool and draught power. Oral cavity lesions which affects productions are the most common cause for the culling of individual from healthy stocks. (Ridler & West, 2007) [1] Oral tumors are most uncommon in small ruminants and mostly are benign. (Del Fava *et al*. 2010) [2].

2. Material Methods
2.a Sample collection
The present study was carried out from January 2017 to June 2018. During this period a total number of 1050 sheep digestive tract samples, irrespective age groups, sex and breeds were examined. Out of these 674 representatives of samples of digestive tract of sheep showing gross lesions were further examined histopathologically. The major tissue specimens for proposed investigation collected from carcasses of sheep irrespective of sex, age groups and breeds from slaughter house of various districts of southern Rajasthan and sample submitted to Department for histopathology also included in this study. The blood samples collected prior to slaughter from jugular vein in two vials, one with EDTA and another without EDTA for serum separations.

2.b Histopathological study
The formalin fixed tissue collected/ received for histopathological examination processed for paraffin embedding by acetone and benzene technique. (Lillie, 1965) [3] The tissue sections of 4-5 micron meter thickness cut and stained with haematoxylin and eosin staining method as a routine. (Luna 1960) [4].

3. Haematobiochemical studies
Hematological studies *viz*., packed cell volume (PCV) hemoglobin (Hb), total erythrocyte count (TEC), total leucocyte count (TLC), differential leucocytes count (DLC), were estimated

following the method of Benjamin, 1985 [5]. All the haematological studies were made within six hours of blood collection. Biochemical studies were conducted by using Technicon Ames RA-50 chemistry analyzer.

4. Result & Discussion

Table 1: Occurrence of various oral tumors in digestive tract sheep

S. No	Oral Tumors	Total cases N=674	Percentage
A	Oral Fibroma	3	0.45
B	Squamous cell carcinoma	2	0.30
C	Adenoma tongue	2	0.30
	Total oral tumors	7	1.05

4.a Histopatholgical studies

Overall occurrence of oral tumors in digestive tract was recorded in 7 (1.05 percent) out of 674 cases.

A. Oral Fibroma

This condition was recorded in 3 (0.4 per cent) cases. Grossly, firm nodular growth was present at the muco- cutaneous junction and near the gum. Histopathologically, the sections showed hyperplastic stratified squamous epithelium, partly hyperkeratotic and hyperorthokeratotic. Thin, finger like rete ridges extended into underlying connective tissue stroma which was fibrocellular. Solid nodular mass of dense hyalinized fibrous connective tissue arranged in haphazard fascicles was the characteristic pattern noticed. (Fig. 1 & 2) Moderate chronic inflammatory cells infiltrate was seen at a few sites. Mahjour *et al*. (2007) & Gardner D.G. (1996) [6 & 7] also reported Similar gross and microscopical observations in Peripheral ameloblastic fibro-odontoma in a cow.

B. Squamous cell carcinoma

This condition was recorded in 2 (0.30 per cent) cases. Grossly, a cauliflower like growth was noticed in oral cavity in one case and another was a ulcerated never healing wound. Histological examination showed irregular cords in submucosa and a significant number of clusters of pleomorphic neoplastic cells proliferating downward. Squamous cells showed keratinization, keratin pearls, haemorrhage, necrosis, numerous mitotic figures and in sections. (Fig. 3) García (2018) [8] recorded similar observation in Milchschaf sheep.

C. Tongue adenoma

This condition was recorded in 2 (0.30 per cent) cases. Grossly, tongue was congested and thickened. Histopathological examination revealed edematous connective tissue and prominent vascular proliferation on the subepithelial region and hyperplastic minor salivary gland tissue with prominent mucous component. (Fig. 4 & 5) Derecia and Cimen (2014) [9] reported a case of adenomatoid hyperplasia in tongue base with similar observations.

4.b. Haematobiochemical studies

Haematobiochemical parameters in all tumor conditions did not reveal significant change. (Table. 2 & 3).

5. Conclusions

Overall occurrence of oral tumors in digestive tract was recorded in 7 (1.05 percent) out of 674 cases in sheep in southern Rajasthan. Occurrence of different types of tumor recorded as oral fibroma, squamous cell carcinoma and tongue adenoma 0.45 percent (3/674), 0.30 percent (2/674) and 0.30 percent (2/674). Tumors were confirmed with histological examination. Haematobiochemical parameters in all tumor conditions did not reveal any significant change.

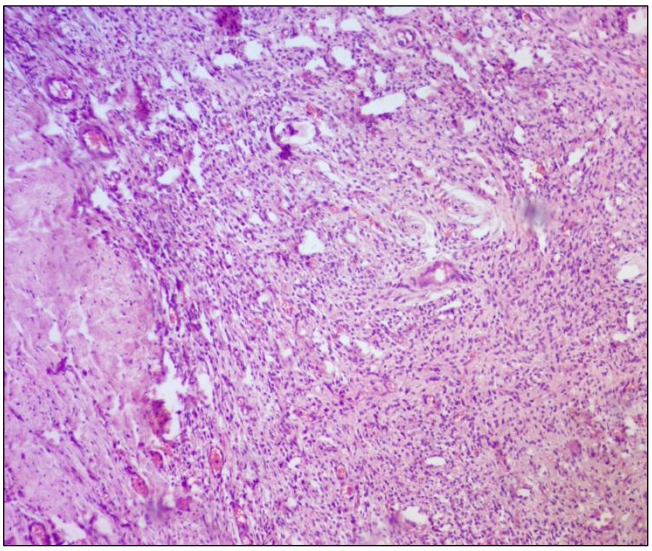

Fig 1: Microphotograph oral fibroma Solid nodular mass of dense hyalinized fibrous connective tissue arranged in haphazard fascicles-H&E-10x.

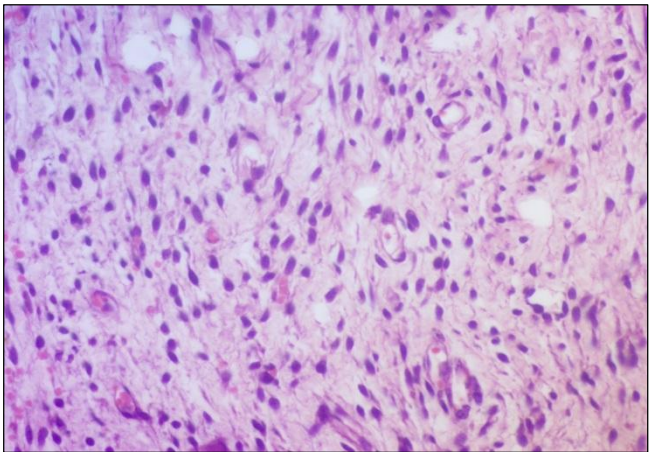

Fig 2: Microphotograph oral fibroma Solid nodular mass of dense hyalinized fibrous connective tissue arranged in haphazard fascicles-H&E-40x.

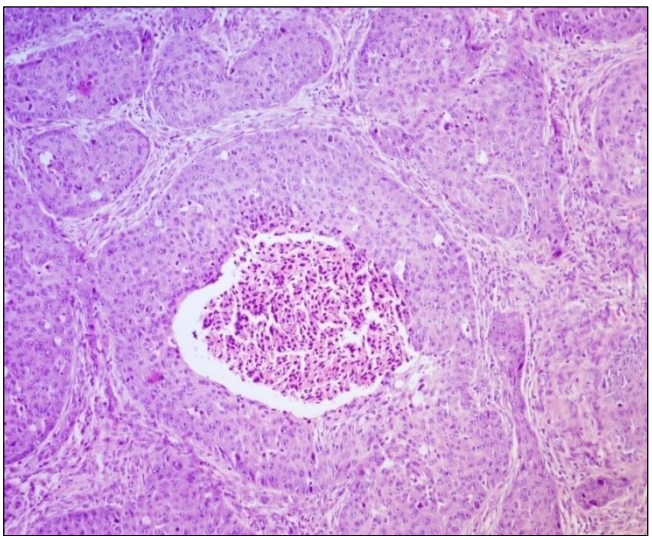

Fig 3: Microphotograph oral squamous cell carcinoma The individual cells showed keratinization, occasionally keratin pearls, necrosis, haemorrhage, numerous mitotic figures-H & E-10x

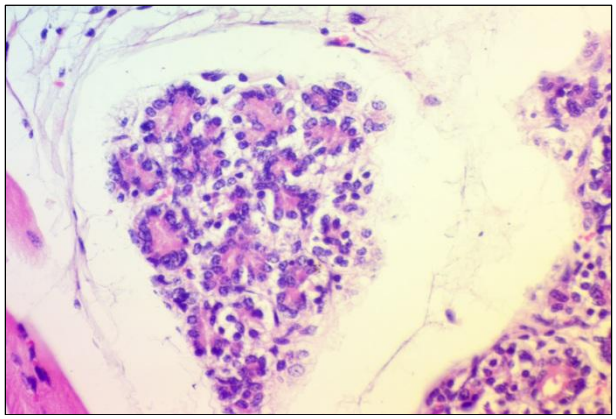

Fig 4: Microphotograph tongue adenoma, edematous connective tissue and prominent vascular proliferation and hyperplastic minor salivary gland tissue with prominent mucous component -H & E-10x

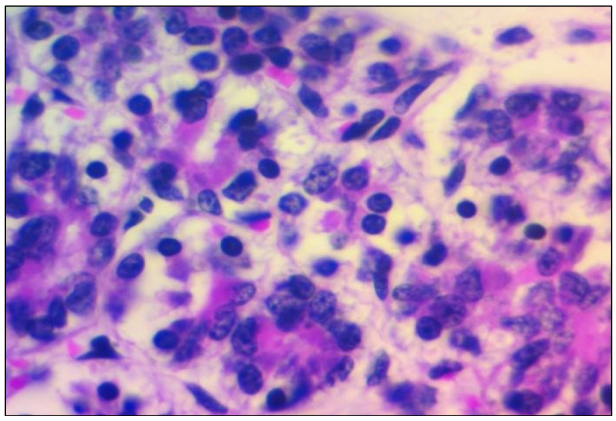

Fig 5: Microphotograph tongue adenoma showing acini like pattern in tongue with hyperchromatic nuclei, mitotic figure and mucous component. H&E-100x

Table 2: Biochemical parameters in healthy and oral tumors in sheep

Biochemical Parameters	Healthy sheep	Oral Fibroma	Oral Squamous Cell Carcinoma
Serum total protein concentration mg %	7.06±0.092	7.36± 0.26	7.430.31
Serum albumin concentration mg %	3.81±0.07	3.8 ±0.18	3.8±0.17
Serum Immune Globulins mg %	3.25±0.02	3.56±0.11	3.43±0.21
serum alkaline phosphates IU/L	77.2±1.06	73.33±1.45	75.66±1.85
Serum alanine amino transferase (ALT) IU/L	26.6±1.07	27.33±0.88	26.33±0.88
Serum Aspartate amino transferase (AST) IU/L	98.6±0.67	99.33±0.88	96±1.15
Creatine Kinase (CK) IU/L	10.12±0.12	10.2±±0.15	10.17±0.15

Table 3: Haematological parameters in healthy and oral tumors in sheep

Haematological Parameters	Healthy sheep	Oral fibroma	Oral squamous cell carcinoma
Hb (g %)	11.92±0.22	11.2±0.42	10.44±0.42
TEC Milli/cmm	10.6±0.18	10.72±0.28	10.78±0.26
TLC Th/cmm	6.24±0.20	6.12±0.30	6.12±0.30
L (%)	56.4±0.92	49.6±1.56	51.6±2.15
E (%)	2.4±0.24	1.6±0.24	1.6±0.24
B (%)	0.4±0.24	0.4±0.24	0.8±0.2
N (%)	36.8±0.80	44.6±1.80	42.2±2.22
M (%)	4±0.31	3.8±0.37	3.8±0.37
PCV (%)	39.2±1.15	37.6±0.67	36.4±0.87

6. References

1. Ridler AM, West DM. diseasess of oral cavity. In: Diseases of sheep, Aitken, I.D. (Ed) 4th Ed. Blackwell publishing, oxford, U.K., 2007, 149-155.
2. Del Fava C, Verissimo CJ, Rodrigues CFC, Cunha EA, Ueda M, Maiorka PC *et al*. Occurrence of squamous cell carcinoma in sheep from a farm in Sao Paulo state, Brazil. Arquivo do Instituto de Biologia de Sao Paulo. 2001; 68(1):35-40.
3. Lillie RD. Histopathological technique and Practical histochemistry, Mc Graw Hill Book co., New York and London, 1965.
4. Luna G. Mannual of Histological staining of the Armed forces institute of pathology. 3rd Edn. McGraw Hill Book co., New York, 1960.
5. Benjamin, M.M. Outline of veterinary clinical pathology 3rd edn. The Iowa State University, press Ames, Iowa, U.S.A., 1985.
6. Mahjour AA, Pear Craft S. Peripheral ameloblastic fibro-odontoma in a cow. Iranian Journal of Veterinary Research, University of Shiraz. 2007; 8(3):20.
7. Gardner DG. Ameloblastic fibromas and related tumors in cattle. J Oral Pathol Med. 1996; 25(3):119-24.
8. García JA, Quinteros C, Romero A, Dutra F. Occurrence of squamous cell carcinoma in Milchschaf sheep in Uruguay. Ciência Rural, Santa Maria. 2018; 48:01.
9. Dereci O, Emen C. Adenomatoid hyperplasia of the minor salivary glands on the buccalmucosa: A rare case report. International Journal of Surgery Case Reports. 2014; 5:274-276.