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Occurrence of certain tumours in Bovines

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Abstract
Occurrence of certain tumours in bovines was studied in Korutla, Jagtial district during the period January 2018 to June 2018. Squamous cell carcinoma, fibroma and lymphosarcoma were diagnosed based on characteristic histopathological changes in various tissue samples which were presented to the Department of Veterinary Pathology, College of Veterinary Science, Korutla. Microscopically, in squamous cell carcinoma proliferation of squamous epithelial cells were noticed and these cells were arranged concentrically and appeared as epithelial pearls. Few mitotic figures and numerous round masses of keratin pearls were observed. In fibroma, proliferating neoplastic spindle shaped fibrocytes and prominent collagenous stroma forming interwoven bundles were seen. In lymphosarcoma, pleomorphic small neoplastic lymphocytes were observed and there was increase in nuclear: cytoplasmic ratio. Among the various bovine tumours examined, cases of squamous cell carcinoma were high followed by fibroma and lymphosarcoma.

Keywords: Bovine tumours, fibroma, lymphosarcoma, squamous cell carcinoma

1. Introduction
Tumour is an uncontrolled proliferation of cells in the body. Cancer can affect all animals. Nowadays the occurrence of bovine cancers is relatively increasing which causes huge economical losses due to decrease in milk yield, carcass condemnation, treatment cost and mortality. Incidence of tumours was highest in dogs followed by cattle [1].
Squamous cell carcinoma is a malignant neoplasm of the squamous epithelial cells usually of the stratified squamous epithelium. In India, it is one of the most common tumours in cattle affecting the horn and eye. The area where pigmentaion is deficient squamous cell carcinoma has been seen [2]. Bovine ocular squamous cell carcinoma is also called 'cancer eye'. The most common areas affected in eye include the cornea, third eyelid, sclera, eyelid margins primarily at muco-cutaneous junctions [3]. Its occurrence is highest during summer and lowest during winter. It is commonly seen in beef cattle in comparison to dairy cattle because of exposure to more sunlight [4]. Fibroma is a benign tumour arises from fibrous connective tissue cells. It is an uncommon neoplasm in large animals. However cases of fibromas reported in tail [5] and in subcutaneous tissue of cattle [6]. Lymphosarcoma is a malignant tumour of the lymphoid system characterized by excessive proliferation of lymphocytes. In cattle, sporadic lymphosarcoma can occur in three different forms i.e. juvenile, thymic and cutaneous. Juvenile lymphosarcoma occurs mostly in young animals below 6 months old, thymic lymphosarcoma affects cattle of 6-24 months old and cutaneous lymphosarcoma is most common in cattle of 1-3 years old. Recently two cases of bovine lymphoma were reported in Ludhiana [7].
Present communication was designed to study the occurrence of certain tumours in bovines of Korutla, Jagtial district.

2. Materials and Methods
A total of 12 tissue samples suspected for tumours from bovines were collected and presented for diagnosis to the Department of Veterinary Pathology, College of Veterinary Science, Korutla over a period of six months from January 2018 to June 2018. Tissue samples were fixed in 10% neutral buffered formalin for 24 hours and washed under running tap water for overnight. Then dehydration was done in ascending grades of alcohol to remove the excess water. Then clearing was done in xylene. Embedding was done using paraffin. Then 5µm thin sections were made using microtome and stained with Hematoxylin and Eosin (H&E) as per the standard procedure [8]. Then the stained slides were examined under microscope for histopathological examination.

3. Results

In present study out of 12 tissue samples examined, 6 were diagnosed as tumours. Among which 3 (50%) were confirmed as squamous cell carcinoma, 2 (33.3%) as fibroma and one (16.6%) as lymphosarcoma based on characteristic gross and microscopic lesions.

3.1 Gross lesions

Squamous cell carcinoma: Three tumour masses from the nictitating membrane of the eye from 3 different buffaloes were presented for diagnosis. Grossly they appeared as erythematous, fragile, ulcerated and cauliflowers like growths. Cut section of the tumour was soft and revealed whitish to pink color.

Fibroma: One tumour mass from the subcutaneous tissue and another from the kidney surface from 2 different buffaloes were sent for histopathological examination. Grossly they were firm, white to grey colored. The cut surface of the tumour mass was solid, dry and white.

Lymphosarcoma: One tumour mass collected from the subcutaneous tissue of buffalo was presented for diagnosis. Grossly it was white to pink in color, soft and mushy in consistency and bulged from the cut surface.

3.2 Histopathological lesions

Squamous cell carcinoma: Microscopically the tumour mass revealed proliferation of squamous epithelial cells. These cells were arranged concentrically and appeared as epithelial pearls. The neoplastic epithelial cells were large in size and vacuolated. Few mitotic figures and numerous round masses of keratin pearls were observed (Fig 1). Infiltration of inflammatory cells was noticed (Fig 2).

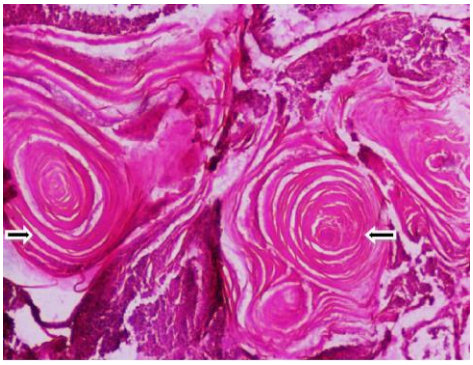

Fig 1: Tumour mass showing round masses of keratin pearls in squamous cell carcinoma (arrow) Haematoxylin &Eosin x40.

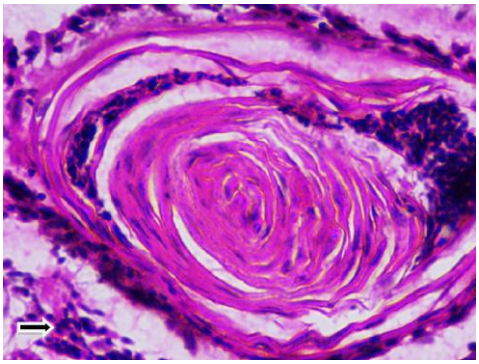

Fig 2: Tumour mass showing round masses of keratin pearls and infiltration of inflammatory cells in squamous cell carcinoma (arrow) Haematoxylin & Eosin x40.

Fibroma: Sections from the tumour tissue showed proliferating neoplastic fibrocytes with eosinophilic cytoplasm, vesicular, elongated and spindle shaped nuclei. Fibrous connective tissue running in all directions forming interwoven bundles were seen. Various degree of vascularisation was observed (Fig 3).

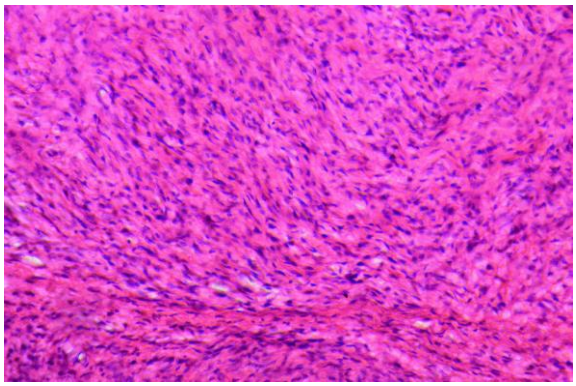

Fig 3: Tumour mass showing proliferating spindle shaped fibrocytes and interwoven bundles of fibrous connective tissue running in all directions in fibroma. Haematoxylin &Eosin x40.

Lymphosarcoma: Microscopically pleomorphic, small to medium and round to oval neoplastic lymphocytes were observed in tumour tissue. There was increase in nuclear: cytoplasmic ratio. Few mitotic figures were seen. Neoplastic cells had scant amount of cytoplasm and round to oval nuclei with distinct cell borders. Tumour cells were separated by a delicate collagenous fibrous tissue (Fig 4).

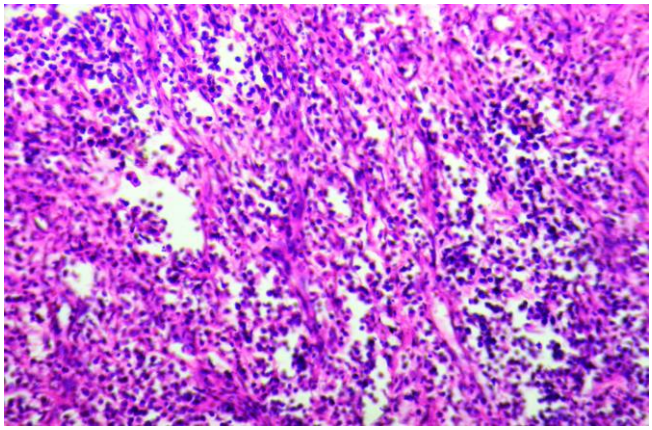

Fig 4: Tumour mass showing pleomorphic small to medium and round to oval neoplastic lymphocytes separated by a delicate collagenous fibrous tissue in lymphoma. Haematoxylin &Eosin x40.

4. Discussion

In bovines, ocular squamous cell carcinoma is the most common neoplasm [9]. Several factors contribute to the development of squamous cell carcinoma including genetic susceptibility, nutrition, age, UV light and viruses [10]. In present study, the microscopic lesions in squamous cell carcinoma are similar with the earlier reports [11-16]. Fibromas account for more than 20% skin tumours in cattle [17]. In present study, spindle shaped fibrocytes forming whorls and prominent collagenous stroma were noticed in fibroma. These observations are in agreement with the previous researchers [6, 18-20]. In cutaneous lymphosarcoma, clinically plaques are noticed on the subcutaneous tissue of neck, back, rump and thighs. Spontaneous recovery can occur in cutaneous lymphosarcoma. It is one of the causes of lymphadenopathy

in bovines [7]. The histopathological picture of lymphosarcoma in present communication is supported by the observations of earlier workers [7, 21, 22]. In bovines, the incidence of malignant tumours was higher than benign tumours among which tumours affecting skin and soft tissues is more when compared to other tumours [23]. In present study also incidence of malignant tumours is high and squamous cell carcinoma constituted 50% of the total tumours in bovines.

5. Conclusion

In conclusion, the present study revealed that among the various bovine tumours examined, high number of cases found includes squamous cell carcinoma followed by fibroma and lymphosarcoma. They were diagnosed on the basis of characteristic microscopic changes in tissues.

6. Acknowledgements

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