



# SINUS CARCINOMA WITH SALIVARY GLAND METASTASIS IN AN ANGAMALY BLACK PIG

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## Abstract

*Sinus carcinoma with salivary gland metastasis in an Angamaly Black pig is being reported. The tumor was soft, fleshy and fragile in consistency Grossly and found located in the nasal sinuses adjacent to the cribriform plate, on necropsy. The tumor comprised of sheets of pleomorphic neoplastic cells that varied in shape such as spindle, oval, round, stellate to polygonal and squamous. The case was diagnosed as undifferentiated sinus carcinoma as per the histopathological observations. Metastasis to the mandibular salivary gland was also detected on microscopical examination.*

**Key words:** Angamaly Black pig, sinus carcinoma, metastasis, salivary gland

Sinus carcinoma is a malignant neoplasm arising from the mucosa lining the ethmoturbinate bone and invades the sinus cavities. The growth results in compression of the surrounding structures and occlusion of the nasal passages causing progressive dyspnoea and finally death. Sinus carcinoma was reported for the first time in India from Madras state of Tamil Nadu (Muthappa, 1930). The tumor was first recorded in cattle of Kerala

in 1960 (Rajan *et al.*, 1972). It is reported more among crossbred cattle in Kerala and found to have no species barrier as it was encountered in all species including wildlife (Rajan, 1987). However the reports of sinus carcinomas in indigenous porcine breeds like Angamaly Black are very rare, as per the available literature.

A female Angamaly Black pig of two years of age, maintained in the University Pig Farm with nervous symptoms such as ataxia, staggering gait and blindness formed the sample for the present study. Nodular, soft subcutaneous protrusions of the nasolateral areas and marked epistaxis were observed. The pig was sacrificed and detailed postmortem examination was conducted at the Department of Pathology of the CV & AS, Mannuthy. Gross examination of the carcass was done in detail and representative tissue samples were collected in 10 percent neutral buffered formalin for histopathology. Sections were made at four micrometer thickness and stained by Haematoxylin and Eosin staining technique (Luna, 1972) and examined under light microscope.

Sagittal sectioning of the head revealed a soft, reddish grey, nodular and

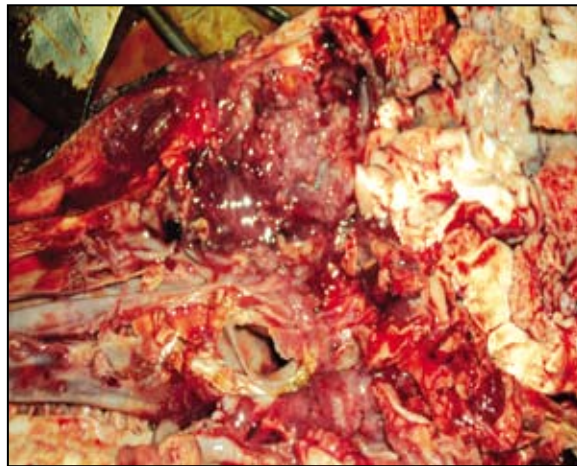
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fleshy tumor mass with a granular surface covered by mucus. The tumour mass rarefied the nasal septum and turbinate scrolls. After rarefaction of the ethmoid bone, the neoplastic growth resulted in the compression of brain, and almost completely occupying the nasal sinuses (Fig. 1).

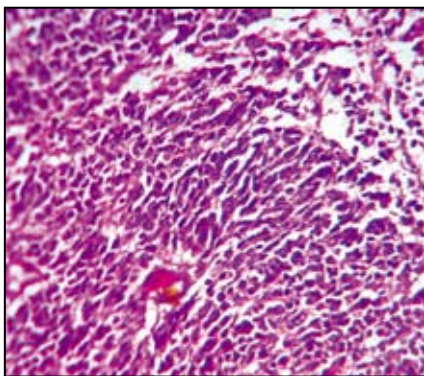
On histopathological examination, the tumor was found to be composed of sheets of pleomorphic neoplastic cells varying in shape such as spindle, oval, round, stellate to polygonal and squamous (Fig. 2). The cells had scanty, faintly basophilic, vacuolar cytoplasm. Cells exhibited large, round to oval to irregular nuclei with marked hyperchromasia, prominent nucleoli and chromatin condensation. Stromal reaction was minimal. The site in brain where the tumor imparted pressure showed diffuse neuronal degeneration, vacuolation, softening,

gliosis and satellitosis. Cells in the metastatic foci of salivary glands were distinctly pleomorphic with an influx of polymorphs in to the acinar structures (Fig. 3). Pressure atrophy of the surrounding acinar structures and associated inflammatory influx of mononuclears were the other evident histopathological changes.

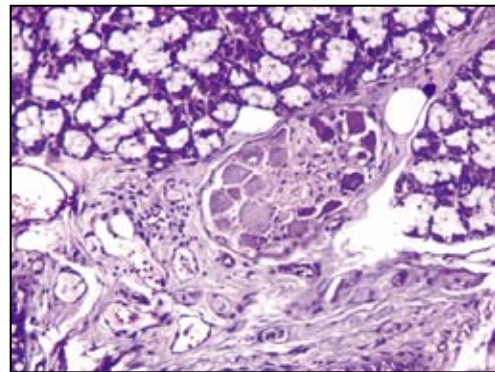
This tumor showed a reverse type of growth pattern rather than the usual anterior direction of growth seen in bovines. The compression on the brain created progressively by the expansive growth might be the reason for the early manifestation of nervous signs. The aggressive growth pattern of the tumor evident by the histological features might have also contributed to this. Rajan *et al.*, (1981) reported complete destruction of the ethmoturbinates, disappearance of the nasal septum and prominent nervous signs in porcine ethmoid



**Fig. 1**, Soft, reddish grey, fleshy tumor mass adhering to brain.



**Fig. 2**, Sheets of undifferentiated neoplastic cells varying in shape as spindle, oval, round and squamous (H&E×400).



**Fig.3**, Salivary gland–Metastasis (H&E×400)

tumor cases. The cells of the tumor were of various morphology with malignant features. Based on the histological observations, the tumor was classified as undifferentiated sinus carcinoma. Tsujii *et al.* (1997) proposed that the proteolytic breakdown of extracellular matrix is thought to be a critical step for the tissue invasion of cancer. Hence, the release of tissue degradation products by the malignant tumor mass might have cleaved the scanty stroma easily favouring tumour invasion and metastasis to the regional salivary glands.

### Summary

A case of sinus carcinoma with salivary gland metastasis in an Angamaly Black pig is reported.

### References

- Luna, L.G. 1972. *Histologic Staining Methods of the Armed Forces Institute of Pathology*. (3<sup>rd</sup> Ed.), Mcgraw Hill Book Co., New York, 258p.
- Muthappa, A.M. 1930. A case of fibroma in the frontal sinus of a cow. *Indian Vet. J.* **7**: 175-176.
- Rajan, A. 1987. Carcinoma of the mucosa of the ethmoid in domestic animals. *Ann. Rech. Vet* **18**: 13-17.
- Rajan, A., Sivadas, C.G., Nair, M.K and Maryamma, K.I. 1972. Incidence and pathology of tumours of the paranasal sinuses in domestic animals. *Kerala J. Vet. Sci.* **3**: 83-101.
- Rajan, A., Sulochana, S., Reddi, M.V., Valsala, K.V., Ramachandran, K.M. and Maryamma K.I. 1981. Tumours of the mucosa of the ethmoid in pigs. *Indian J. Cancer* **18**: 202-205.
- Tsuji, M., Kawano, S. and Duhois, R.N. 1997. Cyclo oxygenase-2 expression in tumor colon cancer cells increases metastatic potential. *Proc. Natl. Acad. Sci.* **94**: 3336-3340 ■