

Study of Neoplasms in Non-human Primates of Assam

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Neoplasia was once considered to be uncommon in non-human primates, but now it is being increasingly noted as non-human primate colony populations age (Cianciolo & Hubbard, 2005). Primary pulmonary neoplasia in non-human primates have included bronchioloalveolar adenoma, bronchial adenoma, bronchiogenic carcinoma, carcinoid, clear cell carcinoma, and small cell carcinoma (Kaspereit *et al.*, 2001). The conditions of neoplasms in Non-human primates like fibroma in cervix (Chakraborty & Datta, 1981), mammary adenocarcinoma (Waggie *et al.*, 2000), ovarian choriocarcinoma (Farman *et al.*, 2005), lymphosarcoma (Kagira *et al.*, 2007), myxomatous neoplasms (Wallace *et al.*, 2008) were recorded. Spontaneous primary squamous cell carcinoma of the lung in a rhesus macaque was recorded by Jean *et al.*, (2011) and they observed that both right and left lung lobes were consolidated and had multifocal white-tan masses at the time of necropsied. The present investigation reports the neoplasm of non-human primates of Assam State Zoo and Department of Forest and Environment, Govt. of Assam during the period from December, 2007 to November, 2009.

Materials and Methods

In the present study, altogether 27 non-human primate carcasses were examined and 3 neoplasms were recorded. The gross lesions were recorded and tissue samples preserved in 10% formol-saline solution and were processed and stained by routine haematoxyline and eosin. Special staining technique/ methods such as Brown and Brenn, Zeihl-Neelsen's were

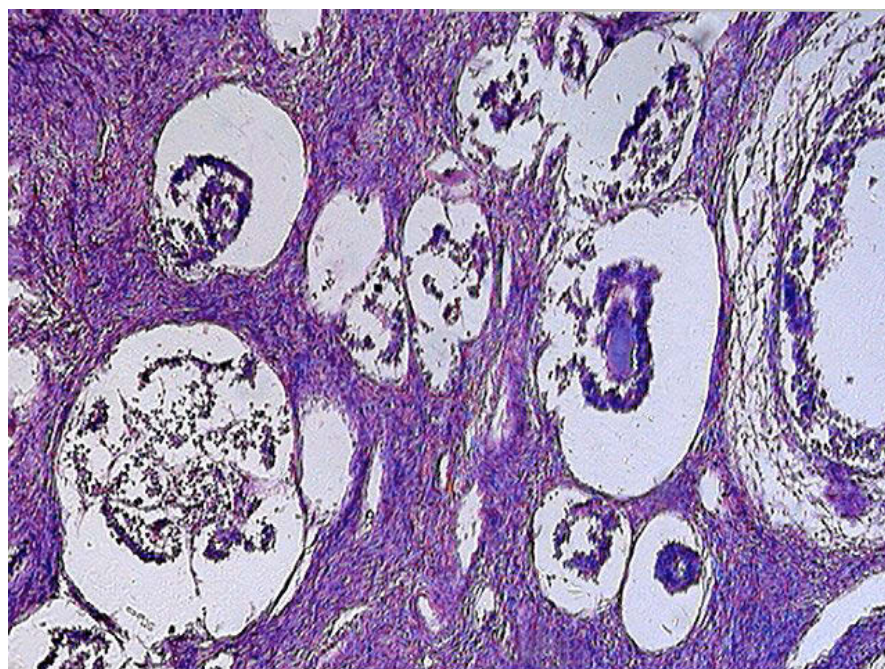


Fig 1. Photomicrograph showing fibrous connective tissue with collagen fibres in the uterus of rhesus macaque. H & E X100

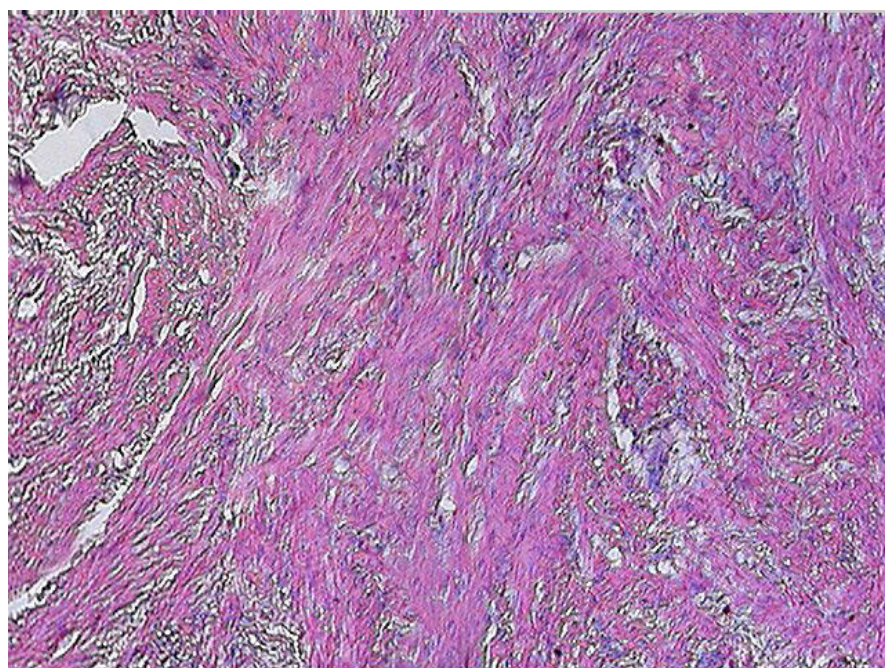


Fig 2. Photomicrograph showing hyperplastic papillary projection in the lumen of bronchi with newly formed bronchiolar structure. H&E X 100

undertaken for isolation of bacteria.

Results

Bronchogenic carcinoma: A free-living rhesus macaque was found in its last stage of life in the reserve forest area of Assam

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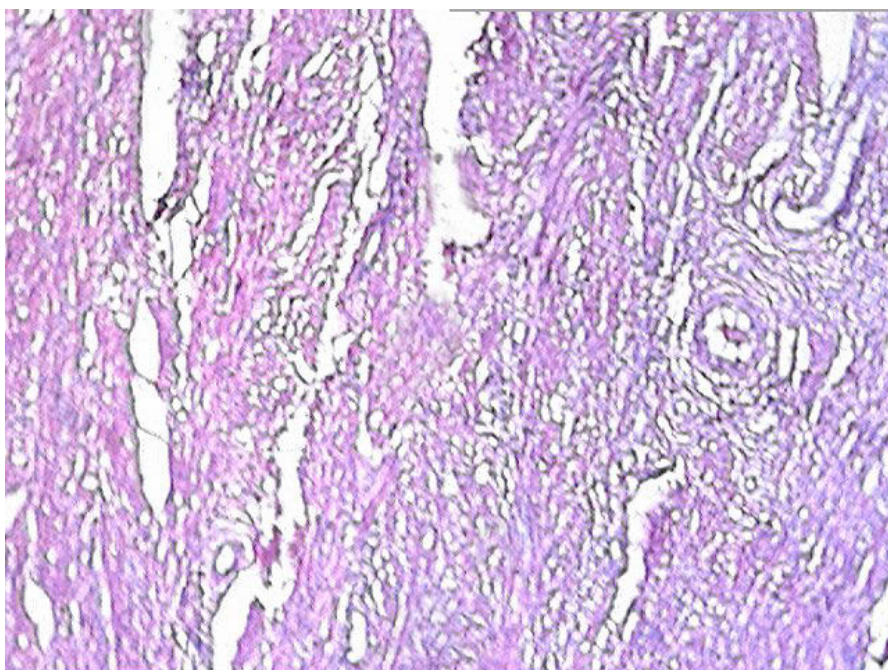


Fig 3. Photomicrograph showing development of glandular structures with proliferation of fibrous connective tissue. H&EX100

State Zoo. The animal was treated with life saving drugs, saline solution and vitamins. On the second day, the animal died. Before death, the animal showed the symptoms of coughing, weakness and wheezing. At necropsy, the diaphragmatic lobes of the lungs showed multiple nodular growths measuring about 1-3 mm in diameter with interspersed areas of consolidation. At some places, the small nodules coalescence and form larger nodules. Fibrinous deposition over the surface of the lung was noticed. On histopathological examination, the bronchiolar wall showed fibroplastic changes with hyperplastic papillary projection in the lumen (Fig.1). The bronchi and bronchiolar lumen were filled with fibrinous mucinous deposits which contained newly formed bronchiolar structures at various stages of development. However, keratinization could not be found. Based on the histopathological changes the tumor was diagnosed as bronchogenic carcinoma. No bacteria were isolated from the tissue sample.

Fibroma: A free living female rhesus macaque died due to enteritis. The animal was found dead at the reserve forest area of Assam State Zoo and sent to the Department of Pathology, College of Veterinary Science, Khanapara, Guwahati for post-mortem examination. At the time of examination, the carcass was found to be emaciated and dehydrated. Grossly, the intestinal mucosa showed presence of watery to thick exudates throughout the length of small intestine. Haemorrhage and ulceration in the intestine was noticed. In the uterus, a growth of about 6-7 cm in diameter of grayish white in colour was found. Microscopically, the tumor was characterized by branches of wavy fibrous tissue running in various directions inter lacing with collagen fibres. The nuclei were either vesicular or spindle shaped and based on microscopical features the tumor was diagnosed as fibroma (Fig. 2).

Fibroadenoma: An old (more than 20 years) captive rhesus macaque died due to senility. The animal was emaciated and

weak at the time of death. Teeth were eroded. On post mortem examination, the thoracic cavity contained large quantities of clear fluid and the digestive tract was empty and filled with mucus. A neoplastic growth of about 5-6 cm in diameter was recorded in the uterus close to the cervix. Microscopically the growth of the uterus showed development of glandular structures of variable sizes along with proliferation of fibrous connective tissue in crisscross direction. The nuclei of lining cells of glandular structure were vesicular in character. In between, fibrous tissue masses, aggregation of hyperchromic as well as vesicular proliferated cells forming a solid sheet of cell structures were noticed. Based on the histopathological alteration the tumor was diagnosed as fibroadenoma (Fig. 3).

Discussion

Bronchogenic carcinoma was recorded earlier in Sykes monkey by Suleman *et al.*, (1984) and they observed small nodular foci in the lung at necropsy. Chakraborty & Goswami, (1997) also reported bronchogenic carcinoma in common langur and recorded multiple nodular growth of diaphragmatic lobes of lung. Gross and histopathological findings in the present study were along the lines of the findings recorded by Goswami (1994). It is interesting to note that Chakraborty & Datta (1981) and Chakraborty & Goswami (1997) reported benign tumors like fibroma, adenoma and seminoma in the reproductive organs of non-human primates. In the present study two benign tumors viz. fibroma and fibroadenoma have been noticed in the uterus of rhesus macaques.

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