

## Congenital Teratoma in a crossbred Jersey calf

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### ABSTRACT

Teratomas are unique neoplastic conditions in different animal species including humans, by virtue of their origin from multiple germinal layers. A condition of congenital teratoma was observed in a 3 days old crossbred Jersey female calf. Clinically, a round growth was noticed on dorsal aspect of the neck and it was removed surgically under local anaesthesia. Upon incision, the growth revealed multiple cavities within the whitish stroma surrounded by a tough capsule. Histopathological evaluation revealed areas of different tissue components viz. stratified and simple epithelium lining the cavities, respiratory tissue with bronchial components of cartilage and mucosa, nervous tissue with nerve fibres and choroid plexus, few vascular elements of small blood vessels and dense connective tissue with leucocyte infiltration. Based on the presence of tissues that arise from multiple germ layers, the current case was diagnosed as a case of congenital teratoma.

**Keywords:** Calf, congenital, crossbred Jersey, Teratoma

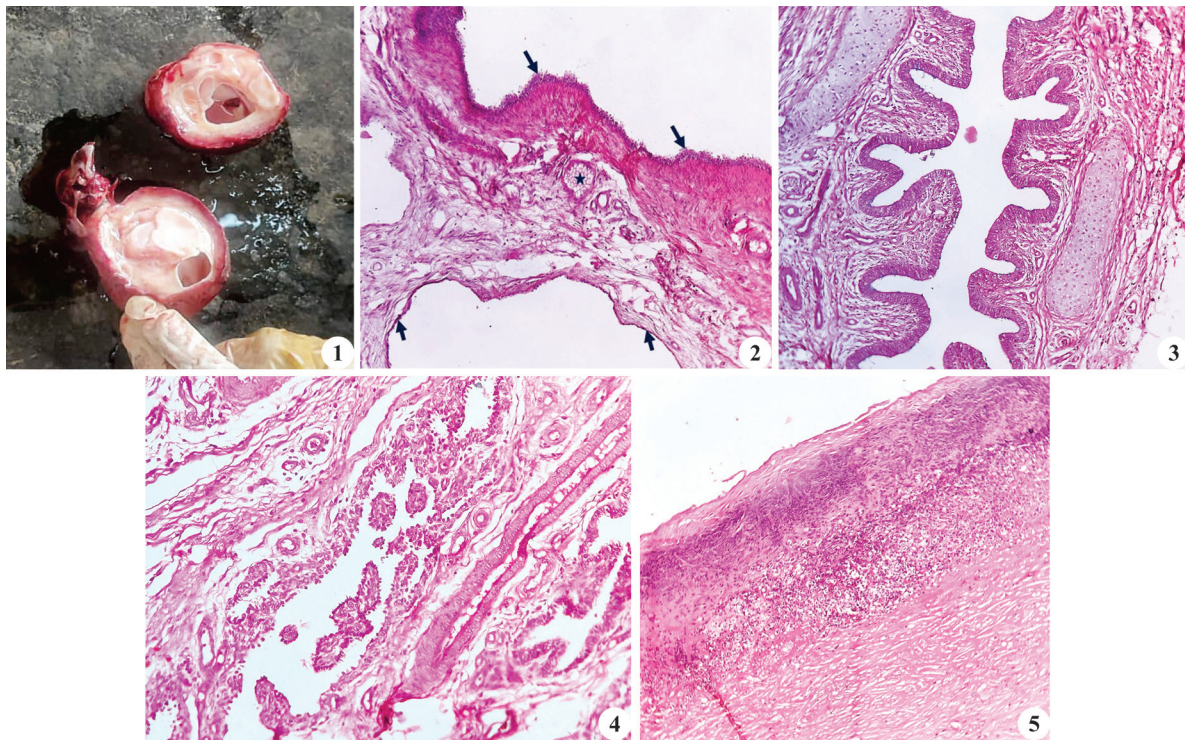
Congenital tumors are defined as tumors existing at and usually before birth<sup>1</sup> or those detected during pregnancy or within the first 2-3 months of life<sup>2,3</sup>. Various congenital tumors have been reported in calves as like hemangiomas, melanomas, mastocytomas, lipoma and neurofibromatosis<sup>2,4</sup>. Teratomas are rather rare neoplastic conditions, especially in ruminants, that are postulated to arise from neoplastic transformation of pluripotent cells<sup>3,5</sup>. They are often composed of tissues which originate from more than one germinal layer<sup>6,7</sup> and were often reported to arise from gonads in different animal species<sup>8,9,10</sup>. However, extra-gonadal teratomas also occur in animals<sup>11</sup>. The present case describes the occurrence of congenital teratoma in a new born calf.

A three day old crossbred Jersey female calf was presented to the Veterinary Clinical Complex, College of Veterinary Science - Garividi with the history of a growth on dorsal aspect of the neck since birth. The growth was surgically removed under local anaesthesia and the sample was subjected for routine histopathological processing followed by Hematoxylin & Eosin staining.

Gross examination revealed round, medium sized growth that was hard and tough in consistency. Upon incision, whitish tissue was noticed with multiple cavities of varying sizes within (Fig. 1). Histopathological evaluation revealed different tissue components of variable origin. Multiple cavities/empty spaces were noticed which were distended, thin walled and lined by simple, flattened epithelium. At certain locations, the cavities were found to be lined by stratified epithelium (Fig. 2). These cavities or ducts lined by epithelium suggest endodermal tissue components of digestive system as described earlier<sup>6</sup>. Diffuse fibrous tissue proliferation was evident in between the cavities that revealed haemorrhages at certain locations with infiltration of leucocytes. Small blood capillaries were also noticed with plump endothelial cells within the stroma. Respiratory tissue was noticed as a derivative of mesoderm, characterised by bronchial structures of mucosa and cartilaginous rings (Fig. 3). Multi-focal areas of nervous tissue components suggestive of choroid plexus were noticed. They were characterised by irregular spaces lined by single layer of epithelial/ependymal cells on a fine stroma of loose connective tissue and blood capillaries forming

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papillary growths into the lumen (Fig. 4). At certain locations, cross sections of nerve fibres were also evident. At the periphery, tissue resembling the keratinised layer of skin was noticed with incompletely differentiated epidermal cells and without any appendageal structures (Fig. 5). Abundant collagen deposition was noticed below the superficial epithelium. Nervous tissue and keratinised epithelium suggested ectodermal tissue components. Certain vascular structures were also noticed that revealed wavy, reticulin fibres in the wall. However, the epithelial cells were tall and columnar in contrast to the regular flattened endothelial cells. All these findings were in agreement with earlier studies that reported simultaneous occurrence of tissues of different germinal layers as like skin, bone, glands and nervous structures in



**Fig. 1.** Cut section of tumor mass with multiple cavities inside; **Fig. 2.** Multiple cavities/ducts lined by simple flattened epithelium and stratified epithelium (arrows). Note the section of nerve fiber (asterisk) (H&E x100); **Fig. 3.** Bronchial tissue with mucosa and cartilaginous rings in the wall (H&E x100); **Fig. 4.** Nervous tissue: Choroid plexus forming papillary in growths lined by single layer of ependymal cells with cilia on apical surface (H&E x100); **Fig. 5.** Keratinised epithelium with undifferentiated epidermal cells and dense collagen deposition beneath (H&E x100).

the teratoma<sup>6</sup>. Based on these observations, the present case was diagnosed as congenital teratoma.

Teratomas are often categorised as mature and immature variants. While mature teratomas are often benign and composed of well-differentiated cells of two or three germ cell layers, immature teratomas are malignant with poorly differentiated embryonal components<sup>12</sup>. However, the tissue components in the present case were well differentiated suggestive of a mature, differentiated and benign teratoma.

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## REFERENCES

1. Dorland's Illustrated Medical Dictionary, 27<sup>th</sup> Edn. WB Saunders Company, Philadelphia London Toronto Montreal Sydney Tokyo, 1988.
2. Misdorp W. 2002. Congenital tumours and tumour-like lesions in domestic animals. Cattle - A review. *Vet Quar* **24**: 1-11.
3. Jacinto JGP, Bolcato M, Sheahan BJ, Muscatello LV, Gentile A, Avallone G and Benazzi C. 2021. Congenital Tumours and Tumour Like Lesions in Calves: A Review. *J Com Pathol* **184**: 84-94.
4. Yeruham I, Perl S and Orgad U. 1999. Case report congenital skin neoplasia in cattle. *Vet Dermatol* **10**: 149-156.
5. Becker S, Schön R, Gutwald R, Otten JE, Maier W, Hentschel R, Jüttner E and Gellrich NC. 2007. A congenital teratoma with a cleft palate: Report of a case. *British J Oral Maxil Sur* **45**: 326.
6. Meuten DJ. 2002. Tumors in Domestic Animals. Iowa State Press, Ames, Iowa, USA.
7. Wetherell D, Weerakoon M, Williams D, Beharry BK, Sliwinski A, Ow D, Manya K, Bolton D and Lawrentschuk N. 2014. Mature and Immature Teratoma: A Review of Pathological Characteristics and Treatment Options. *Med Surg Urol* **3**: 124.
8. Carluccio A, Zedda MT, Contri A, Gloria A, Robbe D, Amicis ID and Pau S. 2017. *Vet Ital* **53**: 327-330.
9. Kavitha K, Poornachandhar I, Thangapandian M and Sarath T. 2019. Benign cystic ovarian teratoma in a crossbred cattle. *Indian J Anim Rep* **40**: 55-57.
10. Makovicky P, Makarevich AV, Makovicky P, Seidavi A, Vannucci L and Rimarova K. 2022. Benign ovarian teratoma in the dog with predominantly neuronal tissue: A case report. *Veterinárni Medicina* **67**: 99-104.
11. Pegas GRA, Monteiro LN and Cassali GD. 2020. Extragonadal malignant teratoma in a dog-Case report. *Arquivo Brasileiro de Medicina Veterinária Zootecnia* **72**: 115-118.
12. Sirivisoot S, Siripara N, Arya N, Techangamsuwan S, Rung-sipat A and Kasantikul T. 2022. Case report: Mature extragonadal teratoma at the proximal part of the tail in a kitten. *Front Vet Sci* **9**: 1003673.