

## Congenital melanoma in a crossbred Jersey calf – A case report

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### ABSTRACT

Congenital melanocytic tumors are rather frequently occurring neoplasms in domestic animals especially in bovines. The present paper document a condition of congenital cutaneous melanoma in a 3 days old crossbred Jersey calf. Clinically, a large, firm, irregularly round growth measuring about 20X17cms was noticed on the right lateral side of the neck. The tumour mass was removed by surgical excision under local anaesthesia. The mass had a dry, dark and blackish cut surface. Cytological evaluation revealed few individual cells with blackish-brown cytoplasmic pigments. Histopathologically, round to fusiform neoplastic melanocytes were noticed proliferating in the dermis. Abundant brownish-black melanin pigments were noticed in the cytoplasm obscuring the nuclear details. Junctional activity and intra-epidermal nesting of neoplastic cells were noticed. Blood vessels and connective tissue stroma were evident amidst the neoplastic melanocytes. Bleached tissue sections revealed numerous spindle and round cells with mild or no cytoplasmic pigmentation. Nucleus was large and round with multiple nucleoli arranged near to nuclear membrane. Based on the gross and histopathological findings, the current case was diagnosed as congenital cutaneous malignant melanoma.

**Keywords:** Congenital, crossbred Jersey calf, cutaneous, melanoma

Melanocytes and melanoblasts are the pigment producing cells, usually seen in the skin and mucous membranes<sup>1</sup>. They are dendritic cells derived from neuroectoderm, which migrate into the dermis and epidermis during embryogenesis. In the skin, they form 'epidermal melanin unit' along with keratinocytes of stratum basale in a highly ordered organisational pattern<sup>1</sup>. Any disruption of such a close association between melanocytes and basal keratinocytes may trigger a continuous proliferation of the melanocytes leading to the development of melanocytic tumors<sup>2</sup>.

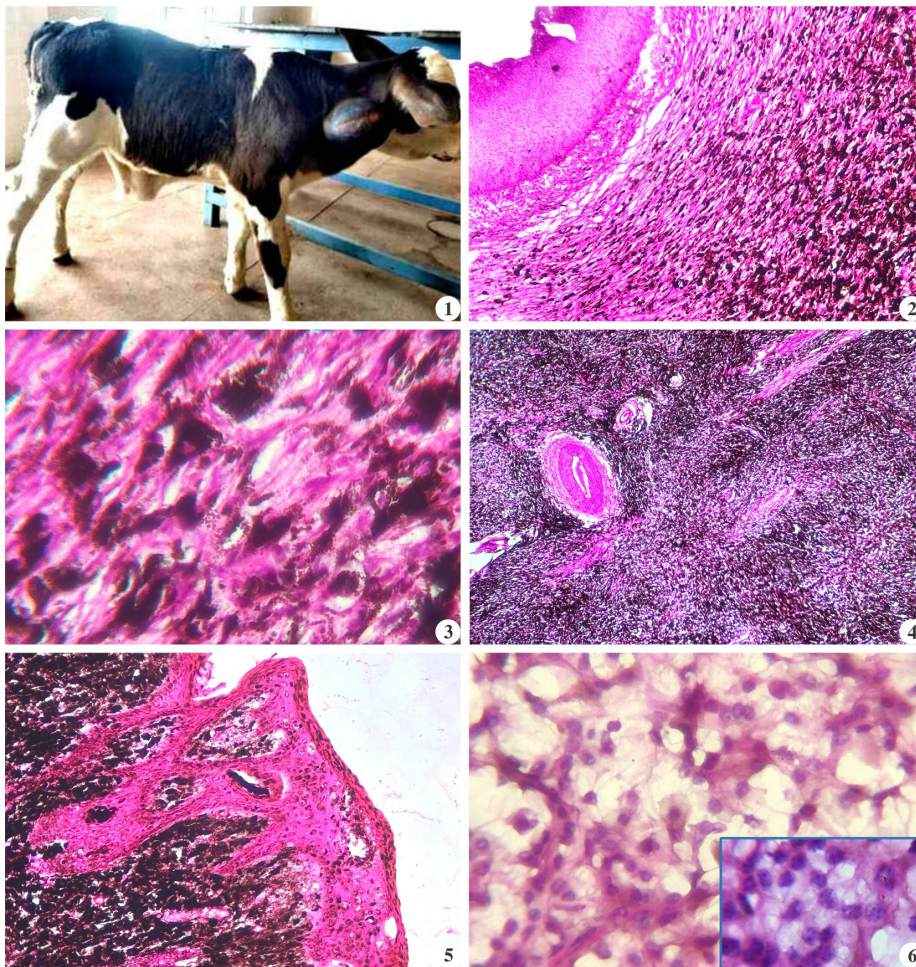
Melanocytic tumors have been reported earlier in wide range of animal species like fishes, reptiles, birds and mammals including humans<sup>3</sup>. Among domestic animals, they are being reported in bovines, dogs, goats, horses and pigs arising from various body locations<sup>4</sup>. In cattle, melanocytic tumors account for ~6% of all neoplasms, mostly arising from the skin<sup>5</sup>, with a higher prevalence in the Aberdeen Angus breed<sup>6</sup> and among cattle with red, grey or black colour coats<sup>7</sup>. On the other hand, congenital tumors are rather rare in cattle with sporadic occurrence<sup>8</sup>. Various congenital tumors like granulosa cell tumor, teratoma, hemangioma, lymphangioma, ameloblastoma and sertoli cell tumors were reported earlier in bovines<sup>9,10,11</sup>. The present report is on a case of congenital cutaneous malignant melanoma in a neonatal calf.

A three days old male, crossbred Jersey cross calf was presented to the Veterinary Clinical Complex, College of Veterinary Science – Garividi, Andhra Pradesh with the history of a growth at the neck region since birth. The growth was surgically resected under local anaesthesia and the tissue sample was submitted for histopathological diagnosis to the Department of Veterinary Pathology, CVSc., Garividi in 10% neutral buffered formalin. The tissue sample was subjected to routine histopathological tissue processing and staining for microscopic evaluation<sup>12</sup>. Few heavily pigmented tissue sections were subjected for bleaching by treating with 0.3% aqueous solution of potassium permanganate

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for 30 min. to 1 hour followed by 1% oxalic acid solution for 1-2 min. as per the standard protocol<sup>12</sup>. The bleached tissue sections were further subjected to routine Hematoxylin and Eosin staining.

Clinically, a large, irregularly round and non-ulcerated mass was noticed on the right lateral side of the neck region completely covered with skin (Fig. 1). The resected growth measured about 20X17cm in size and weighed about 750gm. The cut surface of the mass was dry, firm and blackish in appearance. Impression smear cytological evaluation from the cut surface revealed a few individual cells laden with blackish cytoplasmic pigments.



**Fig. 1.** Large and irregularly round growth on right lateral side of the neck in a Crossbred Jersey calf; **Fig. 2.** Diffuse proliferation of spindle shaped melanocytes below the epidermis with abundant brownish-black melanin pigment. H&E x100; **Fig. 3.** Fine brownish granules of melanin pigment within the melanocytes and stroma. H&E x400; **Fig. 4.** Proliferating melanocytes streaming around blood vessels and capillaries interspersed by islands of connective tissue. H&E x100; **Fig. 5.** Dermal-epidermal proliferation (Junctional activity) and intra-epidermal nesting of malignant melanocytes. H&E x400; **Fig. 6.** Bleached tissue sections revealing malignant melanocytes with large and round nucleus. H&E x100. Inset: Nucleus with multiple prominent nucleoli. H&E x1000

Histopathologically, diffuse proliferation of neoplastic melanocytes was noticed all over the dermis. The neoplastic cells were spindle or fusiform shaped near to epidermis (Fig. 2), while polygonal or round shaped in the deeper region suggesting a combined variant of melanoma as reported earlier<sup>13</sup>. Cytoplasm revealed an abundant dark brown to blackish coloured melanin pigment completely obscuring the nuclear details. At certain areas, the pigment appeared as fine brownish individual granules both within the melanocytes and in the adjacent stroma (Fig.3). Neoplastic cells were also seen streaming around the blood vessels and capillaries of the dermis. Fine strands and islands of connective tissue were evident amidst the proliferating melanocytes (Fig.4). Overlying epidermis appeared thin and undifferentiated

at certain areas, whereas it was completely differentiated with infiltration of neoplastic cells underneath at other regions. Brownish granules of melanin pigment were also evident within the cytoplasm of epidermal cells. Junctional activity of melanocytes characterised by proliferation of neoplastic cells at dermo-epidermal junctions was noticed at certain areas. In addition, intra-epithelial nests of neoplastic cells were also evident within the epidermis suggestive of tumor malignancy (Fig.5). No evidence on the involvement of skin appendages was noticed. Examination of bleached tissue sections revealed numerous spindle and round shaped melanocytes within the dermis characterised by a large round nucleus with multiple prominent nucleoli that were mostly arranged at the nuclear periphery (Fig.6). Cytoplasm appeared non-pigmented with fine cytoplasmic processes.

Based on above gross, cytological and histopathological findings, the present case was diagnosed as congenital cutaneous malignant melanoma. Further, this condition can be categorised as dermal variant due to the infiltration of neoplastic cells into the dermis as detailed

earlier<sup>14</sup>. Although, malignant melanomas were reported to have significant metastatic activity into regional lymph nodes and other organs<sup>15</sup>, it was not noticed in the present case, since the calf recovered eventually with no further reoccurrence.

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**REFERENCES**

1. Li G, Herlyn M. 2000. Dynamics of intercellular communication during melanoma development. *Mol Med Today* **6**: 163-169.
2. Haass NK, Smalley KS and Herlyn M 2004. The role of altered cell-cell communication in melanoma progression. *J Mol Histol* **35**: 309-318.
3. Van der Weyden L, Brenn T, Patton EE, Wood GA and Adams DJ. 2020. Spontaneously occurring melanoma in animals and their relevance to human melanoma. *J Pathol* **252**: 4-21.
4. Sinnott DM, Woolard KD, Heller M and Affolter VK. 2020. Congenital intradural melanoma surrounding the spinal cord of a nine-day-old Saanen goat. *Vet Rec Case Rep* **8**: e001117.
5. Yeruham I, Perl S and Orgad U. 1999. Congenital skin neoplasia in cattle. *Vet Dermatol* **10**(2): 149-156.
6. Winslow CM, Wood J, Gilliam JN and Breshears MA. 2017. Congenital amelanotic melanoma in a crossbred heifer calf. *J Vet Diagn Invest* **29**(4): 544-547.
7. Miller MA, Weaver AD, Stogsdill PL and Fischer JR. 1995. Cutaneous melanocytomas in 10 young cattle. *Vet Pathol* **32**: 479-484.
8. Baumgartner W. 2021. Fetal disease and abortion: Diagnosis and causes. In: Hopper RM, ed. *Bovine Reproduction*, Wiley. 665-716.
9. Fornara MA, Withoef JA, Fernandes NCCA, Borges CSC and Casagrande RA. 2025. Ovarian granulose cell tumor in bovine fetus. *Braz J Vet Pathol* **18**. e018002.
10. Hemanth I, Kumar KM and Kumar BP. 2025. Congenital Teratoma in a crossbred Jersey calf. *Indian J Vet Pathol* **49**(2): 164-165.
11. Sosa E, Giannitti F, Macías-Rioseco M, Caro LAC, Silveira CS, García JA, Scioli MV, Morrell E, Moore DP, Chianini F and Cantón GJ. 2025. Congenital neoplasms in cattle: A literature review and multi-institutional case series. *J Vet Diagn Invest* **37**(4): 559-573.
12. Luna LG. 1968. Manual of histologic staining methods of the Armed Forces Institute of Pathology. 3<sup>rd</sup> Edn, McGraw-Hill, New York.
13. Goldschmidt MH and Goldschmidt KH. 2017. Epithelial and melanocytic tumors of the skin. In: Meuten DJ, ed. *Tumors in Domestic Animals*, 5<sup>th</sup> ed. USA: Wiley Blackwell Publishers. 88-141.
14. Head KW, Else RW, Dubielzig RR. 2002. Tumors of the Alimentary Tract. In: Meuten DJ, ed. *Tumors in Domestic Animals*, 4<sup>th</sup> ed. USA: Iowa State Press. 426-430.
15. Babić T, Grabarević Ž, Vuković S, Kos J and Maticić D. 2009. Congenital melanoma in a 3-month old bull calf. *Vet Arhiv* **79**: 315-320.