

APPENDICULAR FIBROADNEXAL HAMARTOMA IN BERNESE MOUNTAIN DOG- A CASE REPORT

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SUMMARY

A neutered male Bernese Mountain dog was presented for treatment of a pedunculated growth on the left metatarso-phalangeal joint. Blood work showed virtual normalcy of the internal organs, but radiopaque patches in the survey radiographs, indicating large tumors concurrently in the right lateral chest cranial to the heart, and in the abdominal internal organ raised serious clinical concerns on likely malignant growths. The owner declined referral to the oncologist and requested surgical excision of the distal left hind limb growth for immediate relief to her companion dog. Accordingly, the appendicular growth was excised. The preserved mass was identified as non-malignant fibroadnexal hamartoma. Post-operative systemic antibiotic and analgesics were administered in the clinic and same were advised to follow at home with restricted movement of the dog. However, in view of the radiographic evidence of growths in some internal organs, coupled with the established terminal haemangiosarcoma in some of the siblings, the prognosis is guarded. Actually, the pet succumbed most likely due to the unidentified malignancies within a short span of less than 4 months of the first visit.

Keywords: Appendicular, Benign, Comorbidities, Dog, Hamartoma, Malignant, Radiography

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Hamartoma refers to a nodular, non-malignant mass of redundant living connective tissue, mainly collagen (Lopes and Conceicao, 2009). The biodegraded mass, comprising hair follicles and glandular components, named 'fibroadnexal hamartoma'. 'fibroadnexal dysplasia', or 'focal adnexal hyperplasia', represents fibrous tissue reaction to traumatic injury, or malformation of the follicular structures mainly in the adnexal appendages (Mehregan, 1986; Walder and Gross, 1992). In dogs, fibroadnexal hamartoma, a rare developmental disorder (Bartyzel *et al.*, 2017) comprising 25% of all tumor-like growths (Goldschmidt and Schofer, 1992) and 2.7% of the skin tumors (Gross *et al.*, 2005). Large breeds like Labrador retriever, Dalmatian, Doberman pincher are genetically predisposed. Complete surgical excision is curative.

Ammo Getz, a 9-year-old male neutered Bernese Mountain dog (55.2 kg) was presented to the Milford Veterinary Clinic on April 6, 2021 with a pedunculated growth on the left lateral metatarso-phalangeal joint region. Anamnesis revealed accelerated increase in the size of the mass in the past 2-3 weeks. The patient constantly licks the ulcerated mass and scrapes when walking. The growth needed urgent attention, as the breed is known to be susceptible to haemangiosarcomas. The dog patient had eaten light early breakfast. As desired by the owner, mass excision surgery was scheduled the same morning.

In-house blood work (Tables 1 & 2) revealed no noteworthy abnormalities. However, survey radiographs

(Fig. 1a, b) indicated a large-sized tumor cranial to the heart. Radiopaque patch (Fig. 2a and 2b) pointed to concurrent growth in some abdominal internal organ. The owner, briefed about the risk involved, was advised referral to the oncologist for ultrasound-guided biopsy, and confirmation of the suspected malignancies by the pathologist from the excision biopsy. The owner declined and desired immediate relief to her pet with paw mass removal surgery by the pet practitioner.

In mass excision surgery, the geometric configuration of the distal limb growth rendered wide margin resection highly challenging. Further, the patient was on high-risk during anaesthesia in view of the chance detection of unidentified growths in the internal organs. Premedication was done with butorphanol @ 0.2 mg/kg + acepromazine @ 0.025 mg/kg injected subcutaneously. Sterile lactate Ringer's solution was infused with I/V catheter @ 200 ml/hr. Anesthesia was induced intravenously with ketamine @ 2 mg/kg, and midazolam @ 0.1 mg/kg, the patient was transferred to isoflurane gas, hooked to auto-monitoring of the vital functions, which remained unimpaired during surgery. The operation site on the rear left paw was sanitized and prepared by clipping. Then surgical scrub was gently applied around the growth. The base was incised carefully with an elliptical incision all round with No. 10 sterile scalpel blade. Then proceeded with a blunt dissection with a pair of Metzenbaum scissors, ligating the bleeders with 4-0 absorbable sutures carefully to avoid accidental damage to any tendon or ligament. The subcutaneous tissues were

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Table 1
Patient's haemogram 6.4.2021.

Parameter (units)	Value	Reference interval (IDEXX)	Status
TEC ($1 \times 10^6/\mu\text{l}$)	7.52	5.65-8.87	Normal
Haemoglobin (g/dl)	17.1	13.1-20.5	Normal
HCT (%)	49.7	37.3-61.7	Normal
MCV (fl)	66.1	61.6-73.5	Normal
MCH pg	22.7	21.2-25.9	Normal
MCHC (g/dl)	34.4	32.0-37.9	Normal
RDW (%)	19.1	13.6-21.7	Normal
Reticulocytes ($1 \times 10^3/\mu\text{l}$)	159.4	10.0-110	High
TLC ($1 \times 10^3/\mu\text{l}$)	11.85	5.05-16.8	Normal
Neutrophil (%)	73		
Lymphocyte (%)	17.1		
Eosinophil (%)	2.5		
Monocyte (%)	7.3		
Basophil (%)	0.1		
Neutrophil ($1 \times 10^3/\mu\text{l}$)	8.64	2.95-11.6	Normal
Lymphocyte ($1 \times 10^3/\mu\text{l}$)	2.03	1.05-5.10	Normal
Eosinophil ($1 \times 10^3/\mu\text{l}$)	0.3	0.06-1.23	Normal
Monocyte ($1 \times 10^3/\mu\text{l}$)	0.87	0.16-1.12	Normal
Basophil ($1 \times 10^3/\mu\text{l}$)	0.01	0.0-0.10	Normal
Thrombocyte ($1 \times 10^3/\mu\text{l}$)	272	148-484	Normal

Auto cell counter

Table 2
Patient's blood chemistry profile 6.4.2021.

Parameter (units)	Value	Reference interval (IDEXX)	Status
Glucose (mg/dl)	106	70-143	Normal
SDMA ($\mu\text{g}/\text{dl}$)	12	0-14	Normal
Creatinine (mg/dl)	1.2	0.5-1.8	Normal
BUN (mg/dl)	20	7-27	Normal
Calcium (mg/dl)	10.5	7.9-12.0	Normal
Phosphate (mg/dl)	4.8	2.5-6.8	Normal
Total protein (g/dl)	7.2	5.2-8.2	Normal
Albumin (g/dl)	3.5	2.2-3.9	Normal
Globulin (g/dl)	3.7	2.5-4.5	Normal
A/G ratio	0.9		Normal
ALT (U/l)	66	10-125	Normal
ALP (U/l)	418	23-212	High
GGT (U/l)	0	0-11	Normal
Amylase (U/l)	921	500-1500	Normal
Lipase (U/l)	1454	200-1600	Normal
Bilirubin (mg/dl)	0.6	0-0.9	Normal
Cholesterol (mg/dl)	223	110-320	Normal
Cl- (mmol/l)	116	109-122	Normal

Chemistry analyzer

closed in two superimposed layers, the first in the simple interrupted pattern and the second in the simple continuous pattern, to juxtapose the skin edges tightly and compensate for the marginal loss of skin along with the growth. The skin was closed with nonabsorbable 3-0 suture in simple interrupted cruciate pattern.

Post-operative broad-spectrum antibiotic Ampicillin @ 30mg/kg and Carprofen @ 2.2 mg/kg were injected S/C. Take home medications: antibiotics Cefpodoxime tablets @ 5 mg/ kg orally OD for 10 days and Carprofen tablets @ 2.2 mg/kg BID for 5 days with food and Tramadol tablets 50 mg orally BID for 3 days were dispensed for pain management. Home care: advised use of e-collar, and restricted movements for at least 10-14 days to ensure undamaged skin sutures. On day 1 post-surgery, the pet was eating, drinking, walking and sleeping normally.

Gross pathology showed a pedunculated, ulcerated mass, excised from the left rear paw (Fig. 4a, 4b and 4c). Microscopic profile revealed haired skin elevating the epidermis and replacing the dermis. Well demarcated, unencapsulated, expansile raised, moderately cellular mass of well-differentiated but disorganized adipocytes hair follicles, apocrine and sebaceous glands and dermal collagen are seen. Some inflammatory lymphocytes and plasma cells are visible. The epidermis is moderately hyperplastic. Interpretation: Fibroadnexal hamartoma (Fig. 5).

In our well-considered view the name 'fibroadnexal hamartoma' is appropriate, since it addresses both fibroblastic and hyperplastic/ dysplastic adnexal changes. Clinical presentation is generally over the pressure points. Fibrous tissue hyperplasia and inflammatory tissue response supports this contention (Walder and Gross, 1992: Gross *et al.*, 2005). Infiltration of mononuclear cells is the biomarker of advanced folliculitis and furunculosis (Walder and Gross, 1992: Gross *et al.*, 2005; Yager and Wilcock, 2004). An inherited/acquired defect in the normal regulation of skin development and increased synthesis and release of growth factors is also implicated (Lores *et al.*, 2019). However, the precise aetiology remains uncertain.

In the instant case, complete surgical excision of the large benign growth in the dog's distal left hind limb is successful. Recovery is evidenced by the improved body condition. Patient's condition started to deteriorate, and was brought in again on June 4th, 2021. Repeat survey radiography revealed nearly 2-fold increase in the size of opaque patches (Fig. 6a, b; Fig.7). However, the strong possibility of malignant haemangiosarcoma in the internal organs renders the prognosis guarded. Patient was given some palliative treatment, subcutaneous fluids, Vitamin B12 and prednisone @ 1 mg/kg twice a day. The condition improved for a short while. In this context, it is pertinent to note that the owner has come to know that some litter mates have perished earlier, indicating possible genetic predisposition. In perspective, pet owners must procure the pups from only reliable sources.

The clinical condition having deteriorated markedly

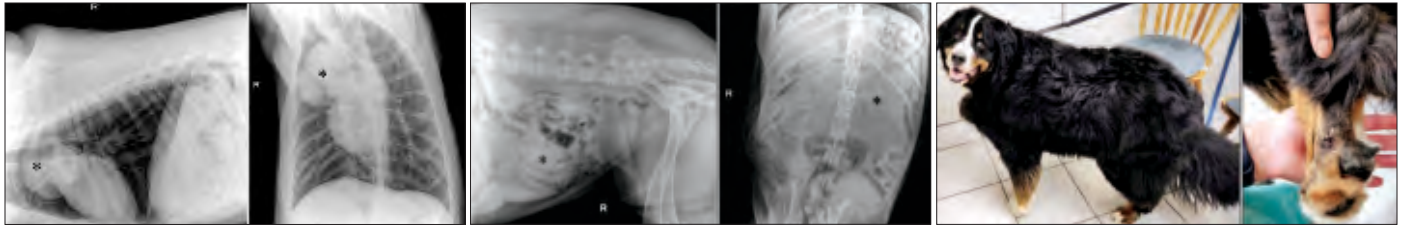


Fig. 1. (a) Right Lateral chest: Please note*(tumor); Fig. 2. (a) Right Lateral abdomen: Please note the mass*; (b) Ventro-Dorsal abdomen

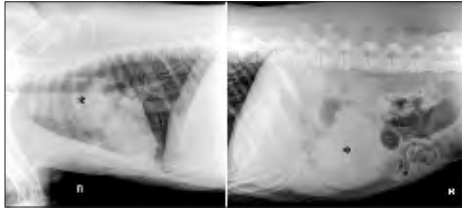


Fig. 6. (a) Right Lateral chest: *mass enlarged; (b) Right Lateral abdomen: *tumor bigger 8 weeks later.

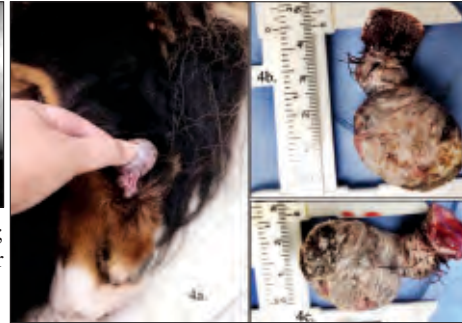


Fig. 4. (a) Growth on the left rear paw; (b & c) Excised growth.



Fig. 5. Histopathology

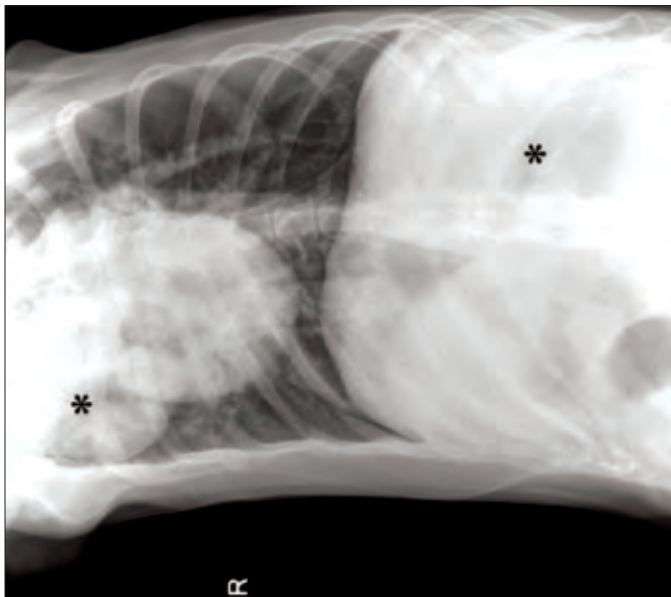


Fig. 7. VD chest and abdomen * tumor bigger 8 weeks later

on June 24, 2021, the patient was brought to the clinic for palliative treatment again, and was given fluids and Vitamin B12. On June 28, 2021, the well-informed owner decided for euthanasia in the clinic as per the protocol. However, the patient died suddenly in the parking lot before euthanasia. The pale white gum indicated that the unidentified suspected abdominal tumor had ruptured, and the patient succumbed to the resulting haemoabdomen shock. The fact that most of Ammo Getz's siblings died earlier from histopathology evidence-based hemangiosarcoma

supports this contention. The highly desirable post-mortem examination could not be performed, as the owner opted for her pet's private cremation at the earliest.

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