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A CASE OF CARCINOMA OF THE SKIN IN A DOG

By

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Abstract

The dog was presented with a swelling on the head and a history of chronic wound which developed into the swollen lump. On examination, the swelling was hard and needle aspiration produced no fluid.

Treatment option was surgery to remove the lump. A complete blood count was done to ascertain the dog was fit for surgery. The dog was premedicated with atropine 0.06mg/kg and xylazine was given after 10 minutes at 2mg/kg. It was induced with ketamine at a dose of 5mg/ml and a total volume of 2.5ml was used.

The lump was successfully removed and sent to the department of Anatomy lab of the University of Benin. Histopathological results showed squamous cell carcinoma of the skin epithelium.

The dog was treated with vincristine to take care of possible remnant tumour cells. Recovery was good and the stitches were removed after seven days. The owner was advised to avoid quacks and give prompt treatment to his pets.

INTRODUCTION

Open wounds in dogs are a serious concern, especially due to the risk of secondary infection. This means even small wounds can develop into something more serious. Generally speaking, the deeper the wound, the more vulnerable they will be. Causes of open wounds in dogs vary. They are often the result of trauma such as from a fall or a bite from another dog. They can also be the result of diseases which causes sores that rupture and become open wounds (Ortiz, 2024).

When a traumatic injury causes an open wound on any part of a dog's external body, a set of mechanisms will immediately begin to restore the tissue back to health.The healing process of a dog's wound is divided into 3 consecutive phases, in which **macroscopic**, **microscopic** and **molecular** events take place. These phases are:

- **Hemostatic/inflammatory phase**: immediately after the injury occurs, platelet aggregation and primary thrombus (blood clot) formation begin. The coagulation cascade then takes place, allowing the generation of fibrin networks and the subsequent formation of a more established thrombus (secondary thrombus) that allows bleeding to cease. After 6 hours post-injury, white blood cells (such as neutrophils and macrophages) begin to arrive at the wound site, helping to decontaminate and debride the wound (Turner, 2025).
- **Proliferative phase**: 2-3 days after the injury, fibroblasts (tissue-generating cells) arrive at the wound site which synthesize a new collagen matrix. At the same time, the process of angiogenesis takes place, which consists of the formation of new blood vessels. Between days 7 and 9, the re-epithelialization phase takes place, through which the keratinocytes will proliferate to restore the integrity of the skin (Turner, 2025).
- **Tissue remodeling phase**: this process can last several months. The collagen that was deposited during the wound repair is replaced by a more stable collagen similar to the one of the original dermis. In this way, the skin recovers its pre-injury

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composition and wound repair is considered complete.

This basic process of wound healing (not counting the remodeling phase) can last **around 10 days**. However, we must bear in mind that this time can vary considerably depending on wound extension and wound depth. Other causes of delayed wound healing include advanced age, hypoprotenaemia, poor wound management, immunocompromised dog, diabetes, chronic corticosteroid treatment (Turner, 2025).

Tumors are uncontrolled growth of cells. Tumors affecting the skin or the tissue just under the skin are the most commonly seen tumors in dogs. Skin tumors are diagnosed more frequently than other tumors in animals in part because they are the most easily seen tumors and in part because the skin is constantly exposed to many tumor-causing factors in the environment. Chemicals, solar radiation, and viruses are just some of the things that can cause skin tumors. (Villalobos, 2024). In this case, a poorly managed wound degenerated into a tumour.

There are several treatment options for cancerous tumors and benign tumors that inhibit normal activities or are cosmetically unpleasant. For most tumors in veterinary practice surgical removal is the most effective option. More recent approach involved a principle of combination therapy (combination of more than one of the treatment approach i.e surgery with chemotherapy, surgery with radiotherapy e.t.c), although some of these approaches may be very expensive. For some cancers, the best approach is a combination of cancer surgery, radiation therapy, and chemotherapy or other cancer medications. Surgery or radiation therapy treats cancer that is confined locally, while cancer medications also kill the cancer cells that have spread to distant sites (Gale, 2024)

It is also probably the least costly option and the one with the fewest side effects. If malignancy is suspected, tissue surrounding the tumor will also be removed to increase the chance that none of the tumor cells are left behind (**Villalobos**, 2024).

History/Signalment

On the 3rd of March 2025, a female German Shepherd was brought to Vet Care consult at Airport Road Benin City with complaint of growth on the head due to wound injury. The wound was said to have occurred around October 2024. The dog was previously taken to an untrained person (a quack) that managed the wound poorly. The wound kept spreading and grew into the massive lump on the head of the dog.

Pic 1: Dog at presentation (top view): Tumorous growth

Pic 2: Dog at presentation (front view)

Pic 3: Initial injury

Diagnosis: Palpation revealed a firm mass and needle aspiration did not produce any fluid.

Management Plan

The plan for treatment was surgery to remove the tumour. The dog was apparently healthy as all the physical parameters were within normal range. A full blood count was done to ascertain that it was fit for surgery.

Table 1: Full blood count with differential leucocyte count

Cell type	Results	Unit	Reference

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WBC	139.57	10^9/L	6-17
Lym %	0.1	%	12-30
Mid %	0.3	%	2-9
GR %	99.6	%	60-83
Lym #	0.14	10^9/L	0.8-5.1
Mid #	0.42	10^9/L	0-1.8
GR #	139.01	10^9/L	4-12.6
RBC	8.06	10^12/L	5.5-8.5
HGB	252	g/l	110-190
HCT	49.1	%	39-56
MCV	60.9	Fl	62-72
MCH	31.3	Pg	20-25
MCHC	513	g/l	300-380
RDW_CV	15.1	%	11-15.5
RDW_SD	47.9	Fl	7-12.9
PLT	221	10^9/L	110-500
MPV	10.9	Fl	7-12.9
PCT	0.241	%	0.09-0.7
PDW	15.1	%	12-17.5
P_LCR	51.1	%	13-43
P_LCC	113	10^9/L	10-100

Surgical Procedure

- Atropine was given at 0.06mg/kg and xylazine was given after 10 minutes at 2mg/kg.
- Dog was induced with ketamine (50mg/ml) at a dosage of 5mg/kg and a total volume of 2.5ml was used.
- The tumour was carefully incised around the edges and cut off from the base
- The tumour removed was immediately sent to the department of anatomy at the university of Benin for histopathology.
- The open wound was sutured using chromic catgut for the subcutaneous tissue.
- Simple continuous suture method was used.
- The skin was sutured using nylon suture material
- Interrupted suture method was used.

Other drugs used

- Penstrep (20%) at 200mg/ml and Oxytetracycline spray was administered to prevent secondary bacterial infection. Diclofenac was administered to take care of pain. Vincristine was administered to take care of possible remnant tumour cells.

Pic 5: After tumour removal

Pic 6: Tumour removed

Pic 7: Dog after surgery

The result from histopathology confirmed squamous cell carcinoma of the epithelium

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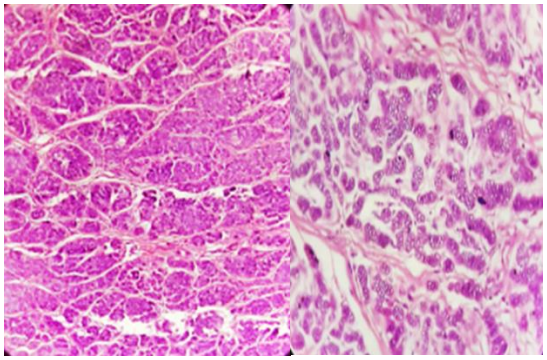

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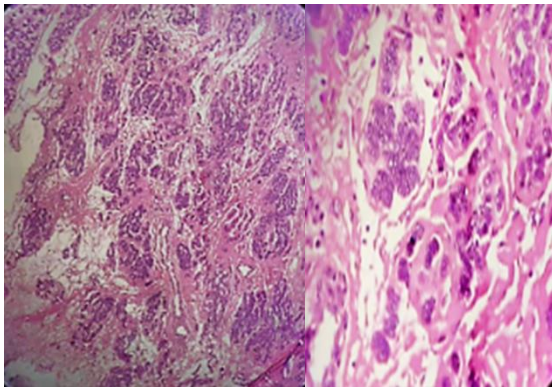

C D

Squamous cell carcinoma of the skin of a dog. Presence of Alveoli epithelial cells with abundant mitotic figures (EC) in the tubules of the alveoli (Al): cellular infiltration of the tubules, and black arrows point to the limited, scanty stroma. Note the compromising basal lamina of the Alveoli epithelium from the connective tissue (black arrows) in (A&B) and the epithelial cells in (C) are pleomorphic. A&B=X100, C&D=X400, Stain: H&E

Conclusion

The stitches were removed a week later and the healing was progressing well. The client was advised to always seek prompt veterinary care and to avoid quacks.

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