A case of squamous cell carcinoma in an ewe

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Abstract

Squamous cell carcinoma is a tumour frequently found to occur in the reproductive tract of sheep. This report describes the gross and histopathological characteristics of squamous cell carcinoma on the head of an ewe. A sheep with a large mass of 9 X 15cm on the right lateral frontal region of the head was submitted for post mortem. Necropsy examination revealed a firm, black lump with multiple cavitations containing whitish pus. The neoplastic mass infiltrated and extended, completely covered the right eye. Other adjacent structures appeared normal. Histopathological examination showed typical neoplastic squamous epithelial cells arranged as islands and cords invading the basal membrane and dermis from the epidermis. There were focal areas of necrosis, frequent and massive keratinisation and pronounced infiltration of inflammatory cells predominantly mononuclear’s. This paper reports a well differentiated malignancy of skin squamous epithelial/epidermal cells forming a carcinomatous mass at a site of the head with abscess of skin not previously reported in ewe.

Keywords: Tumour, Ewe, Squamous epithelium, Skin

1. Introduction

Reports on tumours of the head in ewes are very rare (Moulten et al., 1990). The head of sheep either internally or involving the skin is less commonly affected with tumors (Al-Sultan and Al-Sadi, 1999). Lesions at the head region are usually masses such as abscess,
parasitic nodulation and congenital anomalies. Neoplastic disease does not constitute a factor of economic significance in the practice of sheep husbandry. The relative infrequency of neoplasm’s in sheep is further attested to by the paucity of cases reported in the literature (William, 1931). This paper reports a well differentiated squamous cell carcinoma with abscessation of the skin of the head in an ewe.

2. Case study

2.1 History

A 2 year old female sheep with a lump on the right lateral frontal side of the head was submitted for necropsy at the Faculty of Veterinary Medicine, University Malaysia Kelantan. The sheep had been raised on semi intensive system. There was no history of vaccination and deworming since the sheep was introduced to the farm 6 months ago Post mortem was conducted on the sheep and samples were taken from the head lesion comprising the skin, bone, eye, brain, lymph node, and visceral organs fixed in 10 % formalin for 24 hours before histopathology processing. The processed tissues were stained with haematoxylin and eosin stains for microscopy. Samples were sending to bacteriology from the local head skin abscess.

3. Result and discussion

3.1 Gross pathology

Post mortem examination revealed a large, black and firm mass of 12cm to 9cm size at the left frontal region of the head. The mass had extended and covered the right eye (Figs. 1 & 2). Other organs appeared normal. When the mass was incised, yellowish creamy thick pus was seen oozing from multifocal cavitations lined by thick fibrous capsular wall (Fig. 3 & 4).

Figs.1 & 2: Head of the ewe with a large lump on the right lateral aspect of the frontal region of the head. The mass extended and covered the right eye
Figs. 3 & 4: Incised right lateral mass on the head at the frontal area showed a hard mass of tissue with multiple cavitations, necrosis and suppuration.

3.2 Histopathology

The tissue changes were indicative of infiltrating cellular growth. Tumor cells breach the basement membrane of epidermal layer. The tumor cells most resembled those of normal stratum spinosum. Invasion of epidermal cells deep into the dermal layer forming rete pegs. Tumor cells spread through the dermis as anastomosing cords (Fig. 5 a & b). Various mitotic figures were noticed in the tumor cell masses which form nests like (Fig. 6 a & b). The tumor growth had differential diagnosis with other neoplasia like fibroma, sebaceous gland adenoma, melanoma and squamous cell carcinoma. Histological analysis of tissue at the site of tumor showed only resemblance and similarity to the original neoplastic cells of the stratum spinosum layer of the epidermis. None of the other cell like melanocytes, or glandular cells were found in the lesion. Fibrous connective tissue forming the struma was not abundant with no signs and characteristics of malignancy or benign growth.

Fig. 5: a) Photomicrograph of the head of the skin-ewe showing epidermal cells infiltrating in cords and/or masses into the dermis with connective tissue Stroma (arrows).

b) Photomicrograph of the head of the skin-ewe showing the formation of a pearl nest like which is a pathognomic microscopic lesion for squamous cell carcinoma.
3.3. Pathogenesis

The tumour growth on the frontal area is a type of space occupying lesions complicated with abscess formation. As it grows, it compresses the adjacent tissues such as the skull, the brain and the eyes (Al-sadi, and Al-Sultan, 1979). The mass increases the intracranial pressure and impairs blood circulation in the brain. The tissues in the brain will undergo necrosis due to ischemia. The necrotic tissues cause the inflammatory cells to infiltrate in the tumor mass. In fact, the blood circulation that supplies oxygen and nutrients to the vital centre is inadequate. This will suppress the vital centre and directly inhibit the function of respiratory system leading to death. The most probable cause of death of the ewe is respiratory failure due to depressed respiratory centre in the brain from the space occupying lesion caused by the tumour which results in ischemia.

Information available from various sources seems to indicate that neoplasms are less common in sheep than in most of the other domesticated animals (Luis et al., 2011). This tumour is common in horses, cows, cats and dogs, but relatively uncommon in sheep, goats and pigs (Abdul Rasool et al., 2012).
References


