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Unusual localization of squamous cell carcinoma clinically mimicking mammary carcinoma in an Akkaraman sheep

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ABSTRACT

Squamous cell carcinoma (SCC) is a malignant epithelial tumor of skin. All species of animals are vulnerable to SCC and, sheep are very rarely developing this type of skin carcinoma. The purpose of this report was to describe unusual mammary lobe localization of SCC showing a great resemblance to the mammary tumor according to its gross and clinical examinations. The sheep was brought to department of obstetrics and gynecology and, tumoral tissue was totally extirpated with a suspicion of mammary tumor. The diagnosis made as differentiated squamous cell carcinoma originated from the skin surface and invading through the dermis and subcutis but mammary gland parenchyma was remained intact. There are only few reports of SCC cases belonging to the skin of the mammary area in sheep. Therefore, it is thought that this case will make a scientific contribution with its originality and rarity.

Keywords: Epithelial tumours, Sheep, Squamous cell carcinoma, Udder

INTRODUCTION

There are various local sheep breeds in different regions of Turkey and Akkaraman sheeps have the largest population among other breeds. Akkaraman is a fat-tailed sheep which has high survival and production rates even in poor feeding conditions (Ozmen et al., 2020).

Squamous cell carcinoma (SCC) is a malignant epithelial tumor of skin that consists of anaplastic epithelia exhibiting morphologic differentiation attempts to the keratinocytes. There are several factors that are associated with tumor development such as prolonged exposure to ultraviolet light, lack of hair or sparse hair coat, and lack of skin pigmentation. Anatomical predilection sites are the ears, eyes, nose, perineum, and any depigmented skin regions of the body (Namjoo et al., 2012). Angora goats have breed predisposition for the development of SCC especially in their head region

because of their depigmented hair and direct UV exposure during grazing. Though the SCC is a common skin tumor of all species of domestic animals, it is occasionally seen in sheep (Goldschmidt and Goldschmidt, 2016). SCC tumors occurs most frequently on the muzzle, lips, eyelids, pinnae, perineum and, vulva in sheep (Macedo et al., 2008; Mauldin and Peters-Kennedy, 2016). The purpose of this case report is to draw attention to a rare case of squamous cell carcinoma mimicking mammary carcinoma and to do scientific contribution by rarity of the case.

MATERIALS and METHODS

In this case, a 5-year-old Akkaraman sheep was brought to Department of Obstetrics and Gynecology Clinics with complaints of stiffness and swelling in its mammary. The owner of the animal reported that he had bought new animals 1-2

months ago and this animal came together in that flock. For this reason, although the exact information about the anamnesis is not known, it has been told by previous owners that the animal gave birth 2-3 months ago and there has been no change in the mass since new owners bought the animal. However, they brought it to our clinic because of the complaints of loss of appetite and increased weight loss for last two weeks.

In the first examination, it was determined that the mass hanging from the abdomen, which is thought to originate from the mammary gland, enveloped the teat (Figure 1), and at the same time, firm consistency was detected in the palpation of the right mammary lobe. The tumor was observed on right mammary lobe region, and it had an irregular shape and 15x11.5x9 cm dimensions with a 3 cm ulcerative area on the skin surface (Figure 2).

As a result of increased weight loss, loss of appetite, loss of interest to surroundings and irregular shape of mass, it was decided that sheep had poor prognosis and because of loss of milk yield and future economic concerns and treatment expenses, animal was culled, and slaughtered. Immediately after slaughtering, tumoral tissue was totally extirpated with a suspicion of mammary tumor, then sent for pathological examination. Also, at post-mortem systemic necropsy examination revealed no other mass foci or metastasis. The tissue was firstly trimmed and fixated in buffered 4% paraformaldehyde solution. After routine tissue follow-up procedures, paraffin embedded and thin sections of 5 µm were cut, deparaffinized and stained with hematoxylin-eosin (HE) and Masson's Trichrome stains (Munro, 1971). It was histopathologically examined and photographed under trinocular light microscope (Olympus BX51, DP25 Digital camera).

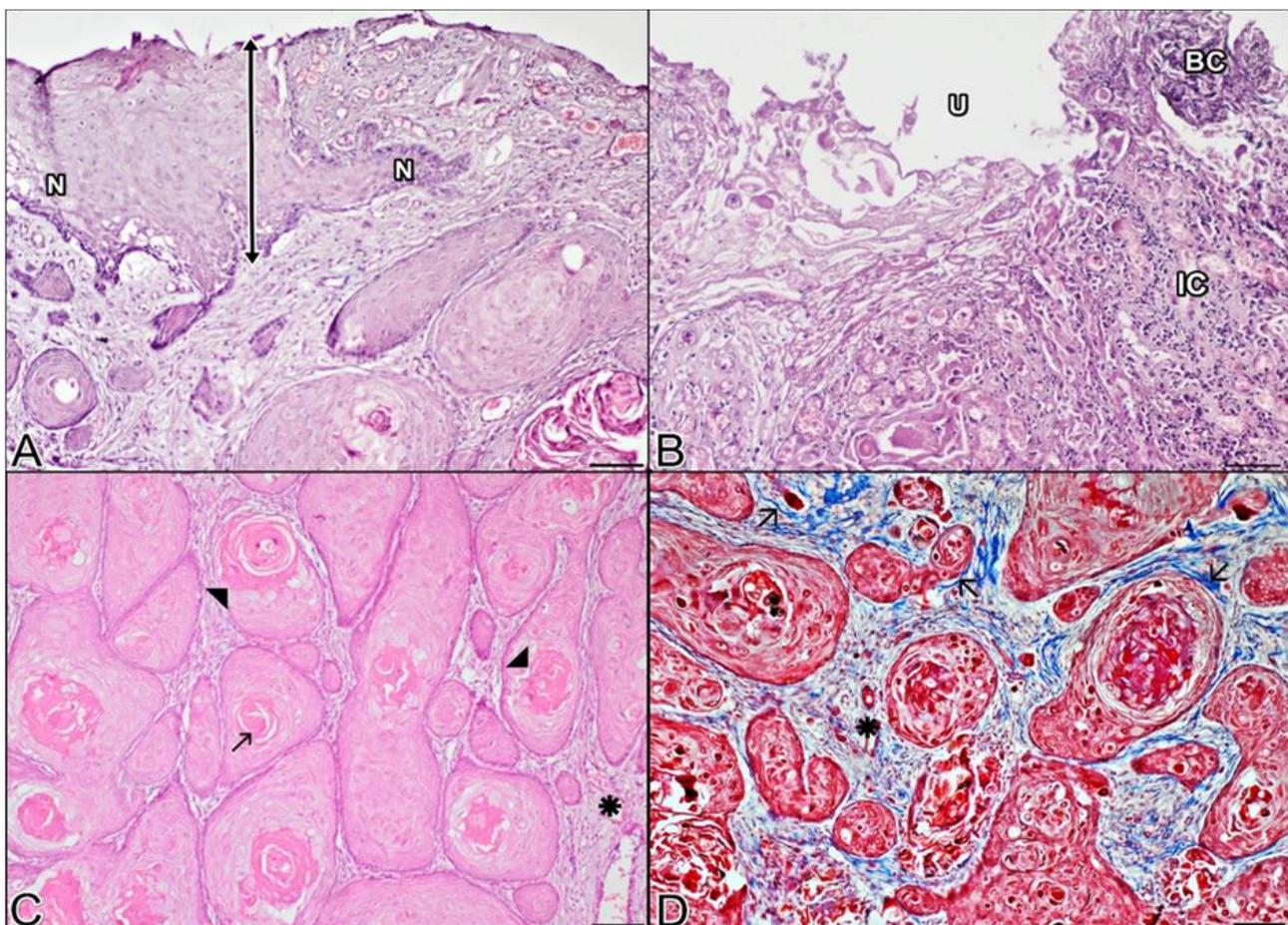


Figure 3. Sheep, well differentiated squamous cell carcinoma, mammary skin. (A) Epidermal hyperplasia (double headed arrow) and tumoral cells invading the dermis. Hyperplasia of basal layer cells (N). Haematoxylin and eosin staining HE. (x100) Bar=100µm. (B) Bacterial colonies (BC) and inflammatory cells (IC) infiltrations in ulcerated area (U). HE. (x100) Bar=80µm. (C) Parakeratotic (arrowhead) and hyperkeratotic keratin pearls (arrow) and fibrovascular stroma (star). HE. (x200) Bar=100µm. (D) Collagen fibrils (arrow) and fibrovascular stroma (star). Masson's trichrome staining. (x200) Bar=100µm.



Figure 1. Appearance of mass that hanging from the abdomen on the teat



Figure 2. Measurements of mass before removal

RESULTS

Microscopic examination showed hyperplasia and acanthosis of the epidermis and the origin of the tumor was keratinocytes in the epithelium. The basal layer keratinocytes underlying the epidermis had hyperchromatic and pleomorphic nucleuses, some were also necrotic in appearance. Neoplastic cell proliferation and infiltration to the dermis, with islands of invasive neoplastic epithelial cells were prominent as shown in Figure 3. Tumor cells with irregular eosinophilic cytoplasm surrounding the keratinous material at the center, making neoplastic island or cords, also called keratin pearls or cancer pearls were observed. Some of these cancer pearls were not containing any chromatin material (hyperkeratotic), while others had chromatin residues but were not form a complete concentric structure (parakeratotic). Abundant neutrophil leukocytes infiltrations and mononuclear cells were observed inside the tumor parenchyma due to erosion, ulceration and bacterial contamination on the skin (Figure 3). The epithelial origin of the tumor was confirmed by Masson's trichrome staining and there was observed thick collagen fibrils surrounding neoplastic cell islands. As a result of these findings, though appearance and palpation of mass looked like mammary tumor, the case was evaluated as well differentiated squamous cell carcinoma which is located and involved in

mammary area but not originated from mammary gland.

DISCUSSION

This tumor type has been reported in different breeds of sheep, such as Merino, Polwarth, Ile de France, and Corriedale (Tustin, 1982; Ramos et al., 2007; Abo-Aziza et al., 2017). Though there are only few cases of SCC in udder in different breeds of sheep (Ahmed, 2018), no SCC case report in Akkaraman sheeps was found in researches and in literature reviews. In that manner it will be a unique and rare case of SCC in Akkaraman sheep. Lesions can be reported in any part of the body but usually appear on areas of the skin with a lack of pigment or wool (Mauldin and Peters-Kennedy, 2016). In this case, sheep was first shown to have well-differentiated SCC in the right mammary lobe skin region near to udder. Although this area is hairless, it is one of the regions likely to be exposed to sunlight due to its anatomical nature. For example, in photosensitization cases, photodynamic agents in the skin of the mammary and teat are easily activated by encountering UV rays and severe erosion and edema occur. However, in Akkaraman sheeps, SCC cases reported to date do not have a mammary area. Even more interesting, any mass shaped in this region tends to be clinically referred to as a mammary tumor. In this case, the diagnosis of SCC, which has no connection with the mammary tissue, was made in the histopathological examination of the mass, which was clinically suspicious of mammary tumor. As a result, rarely there are reports of SCC cases belonging to the skin of the mammary area. Thus, this case is unique and have scientific contribution by its rarity.

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REFERENCES

- Abo-Aziza FAM, Zaki AA, El-Shemy A, Abd Elhalem SS, Amer AS.** Immunological and histopathological changes in sheep affected with cutaneous squamous cell carcinoma and treated immunotherapeutically. *Vet World.* 2017; 10(9):1094.
- Ahmed YF.** Aggressive form of mammary squamous cell carcinoma in sheep. *Vet Sci Technol.* 2018; 09:8.
- Goldschmidt MH, Goldschmidt KH.** Epithelial and melanocytic tumors of the skin. In: Donald JM, eds. *Tumors in Domestic Animal.* 5th ed. Iowa: John Wiley and Sons Ames; 2016. p.129-131.
- Macedo J, Riet-Correa F, Medeiros Dantas AF, Dantas Simoes SV.** Diseases of the skin in sheep and goats from the Brazilian semiarid. *Pesqui Veterinária Bras.* 2008; 28(12):633-642.
- Mauldin EA, Peters-Kennedy J.** Integumentary system. In: Maxie MG, eds. *Jubb, Kennedy & Palmer's Pathology of Domestic Animals.* 2nd ed. St. Louis, Missouri: Elsevier; 2016. p.509-736.
- Munro BH.** Manual of histologic staining methods of the Armed Forces Institute of Pathology. 3th ed. New York: Elsevier; 1971. p.249.
- Namjoo AR, Soroori S, Farid M, Nourani H.** An unusual squamous cell carcinoma in a sheep: a case report. *Comp Clin Path.* 2012; 21(6):1383-1386.
- Ozmen O, Kul S, Gok T.** Determination of genetic diversity of the Akkaraman sheep breed from Turkey. *Small Ruminant Research.* 2020; 182:37-45
- Ramos AT, Norte DM, Elias F, Fernandes CG.** Squamous cell carcinoma in cattle, sheep and horse: study of 50 cases in south of Rio Grande do Sul. *Brazilian J Vet Res Anim Sci.* 2007; 44:5-13.
- Tustin H.** High incidence of squamous cell carcinoma of the vulva in Merino ewes on a South African farm. *J S Afr Vet Assoc.* 1982; 53(3):141-143.