

## **HISTOPATHOLOGICAL STUDY OF VULVAR SQUAMOUS CELL CARCINOMA AND RUMINAL FIBRO-PAPILLOMA IN COWS IN BASRA PROVINCE**

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### **ABSTRACT**

Eight Samples of tumor masses were collected from cases of (3) squamous cell carcinoma in vulva (SCC) and (5) ruminal fibropapilloma in cows from Basra province south of Iraq during the period February 2013 through January 2014 . The cases of SCC cases were characterized by smooth, dry, white poorly demarcated dermal bundles of homogenous tissue with necrotic or and hemorrhagic foci separated by fibrous tissue in the early and late stage named as acanthosis . The size of fibropapilloma cases were variable in size and characterized by abundant proliferating fibrous tissue mass growth in the rumen covered by stratified squamous epithelium of varying thickness exhibiting marked hyperkeratosis of the stratum corneum of rumen.

### **INTRODUCTION**

Squamous cell carcinoma is a malignant keratinocytes tumor of stratified squamous epithelium . It is almost exclusively found in cows, but it has also been described in sheep exposed to solar radiation for long time, as well as in mares and bitches (1). Breeds of cow with high levels of solar irradiation breeds but with low levels

of vulvar melanin pigmentation are predisposed to this neoplasm of cattle & horse (2,3). This type of neoplasms is identified on the vaginal mucosa or at the junction of vulvar mucosa with the skin (4,5). In addition to sunlight, carcinogens contained in tobacco, coal tar and soot, and arsenic have been shown to act as predisposing factors. In addition, factors such as the phenotype of fair skin and rarely tans, the actinic keratosis (AK) is the precursor lesion to SCC (1,6). Some searchers mentioned that the SCC is a relatively common locally invasive and occasionally metastatic neoplasm of most domestic species. Masses of SCC are ulcerated and streaked with red, can be an aggressive tumor that spread by both local infiltration and metastases unless diagnosed early almost exclusively in fully mature (7,8,9). The histological structure depend on the carcinoma stage. In the early stage, there are thickening of horny layer under the form of foci, the granular layer is non-uniform, and the spinous layer cells become more elongated in shape or large irregular cell hyperchromatic nuclei and pale cytoplasm while the dermal connective tissue is less dense and slightly edematous, being intensely vascularized with slight eosinophilic and lymphocytic infiltration. In the acanthosis stage, hyperkeratosis is moderate, basal cells have an irregular palisade arrangement, dermal papillae are intensely vascularized with eosinophilic and lymphocytic infiltration. Sebaceous glands are large and active some of them being cystic (10,11).

Penetration of the significantly elongated spinous cells gradually appears and the basal layer cells arranged in palisades of epithelial buds developed from cells, keratinized cells appear under the form of epithelial pearls and peripheral cells from these epithelial buds proliferate and infiltrate in all directions vulvar SCC metastasis

in regionally lymph nodes and lungs (12). Forestomach fibropapilloma in cattle, most often occur in the rumen near the ruminoreticular groove, thus causing recurrent bloat. Fibropapilloma have a distinct fibromatous portion as well as a hyperplastic epithelial component. This type of tumor were elevated, fleshy, multinodular proliferations from the affected mucosa and may be ulcerated, the tumor consist of abundant proliferating fibrous tissue with an epithelial covering of variable thickness (5,13). this tumor was thickness in covering epithelium from which an exaggerated rete peg formation extends into a mass fibrous tissue that has few mitotic figures with large nuclei, fibropapilloma present wart-like lesions in rumen, reticulum, mouth, esophagus of cattle and buffaloes revealed the presence of small nodular to large spherical or slender growths with the base, present on mucosa and ruminal pillar, indicating these as the cellular proliferation site (14)

The aim of this research is collected, known and limited causes of some cancer cases in cattle with study of them by histopathological examination because increase cancer cases in Basra with recurrent it, which are become dangerous diseases threatening factors for the animals.

## **MATERIAL AND METHODS**

During the period from February 2013 through January 2014 eight cases of two types of cancers ( 3 SCC of vulva and 5 fibropapilloma in rumen. these animals were reported by examined in the farm or the private veterinary clinic in different localities in Basra province. The local cows were brought to the veterinary clinic of the university of Basra. The cancer mass was extracted from the vulva region (3 SCC) and (5 fibro

papilloma) of rumen which were washed with normal saline solution and then fixed with 10% formalin for 48 hrs. then the specimens were passed through graduated alcohol percentage (70%, 80%, 90%, 100% and 100%) and then clear with xylene solution and finally embedded with paraffin wax 55° c , and the blocking tissue had been cut by microtome at 5.um thickness. The sliced paraffin block placed gently into warm water bath(37°c)and then places on albumin slid and staining with hematoxylin and eosin and examined by a light microscope (15).

## **RESULT**

squamous cell carcinoma :

Macroscopically the samples appeared as irregular mass about 2-3cm in diameter , reddish white in color and nodular under and around the vaginal surface skin as in figure(1).

Microscopically of squamous cell carcinoma was not confined to the epidermis or mucosa but infiltrated the underlying tissues with epithelial pearls as in Figure(2),(3). The epithelial cells were large size , vacuolated , the apparent deficiency of unclear chromatin , the large nucleolus and the presence of numerous mitotic cells as in figure(4) .In cutaneous carcinomas round masses of keratinized epithelial cells arranged concentrically may be numerous with epithelial pearls as in figure (5) and there are infiltration of inflammatory cells as in figure (6).

**Fibropapilloma :-**

Microscopically, the cancer mass consist of connective tissue covered with stratified squamous epithelium of varying thickness as in Figure (7) aswell as there are mitotic figures are common with collagen fibers become prominent as in figure (8) .

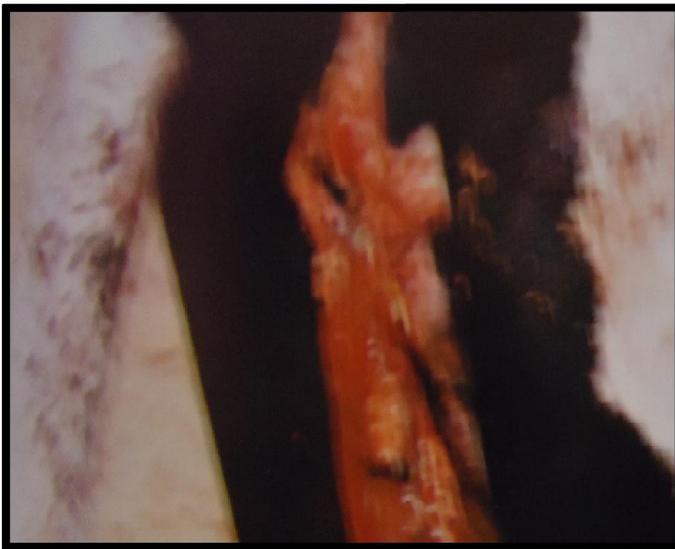


figure (1), show nodular mass of squamous cell carcinoma in vulva region in cow.



Figure (2),section of vulva tissue: epithelial pearls in a squamous cell carcinoma of cattle(P) and a continuation of the infiltration of inflammatory cells into the underlying tissue . 4x H&E

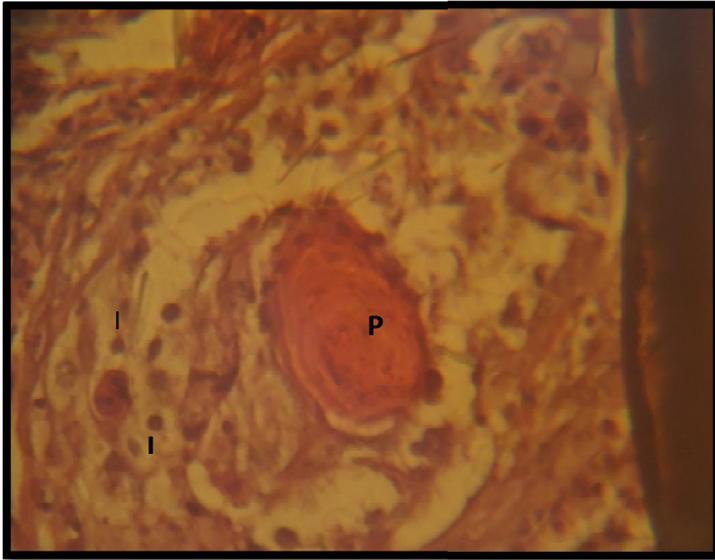


Figure (3),section of vulva tissue, show: epithelial pearls(p) in a squamous cell carcinoma of cow and infiltration of inflammatory cells (I)into the underlying tissue mainly macrophages. 40x H&E

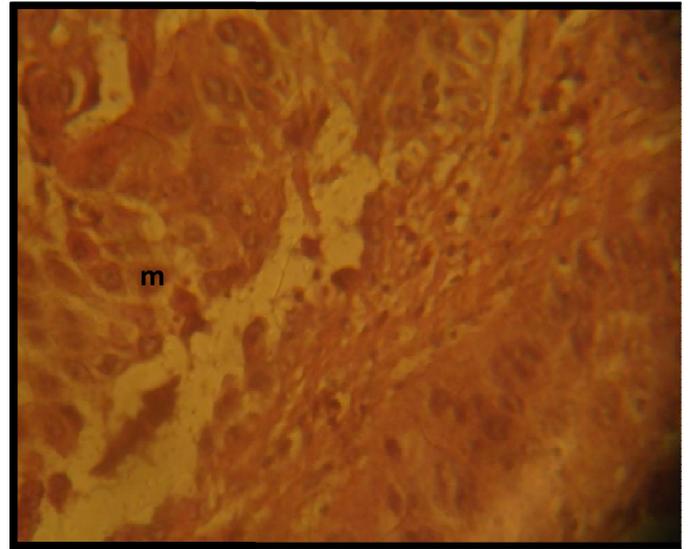
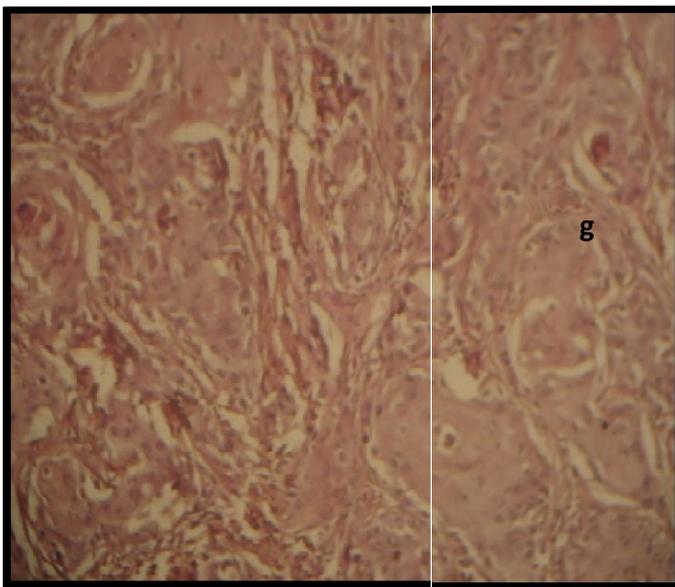
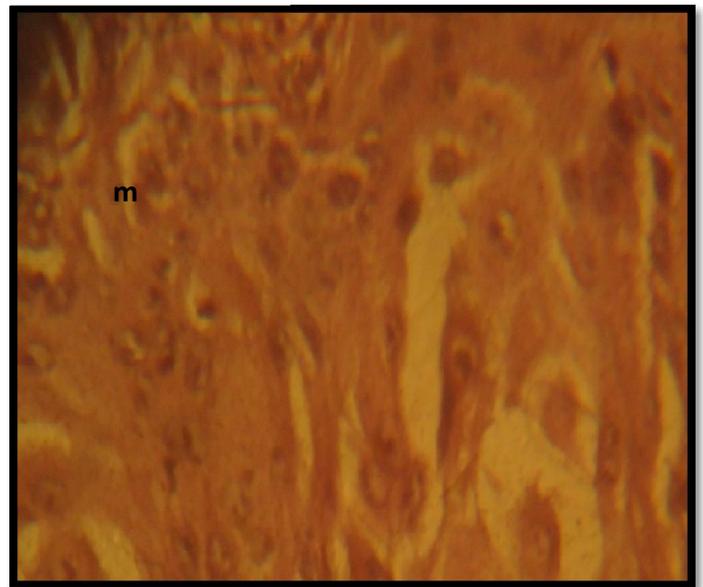


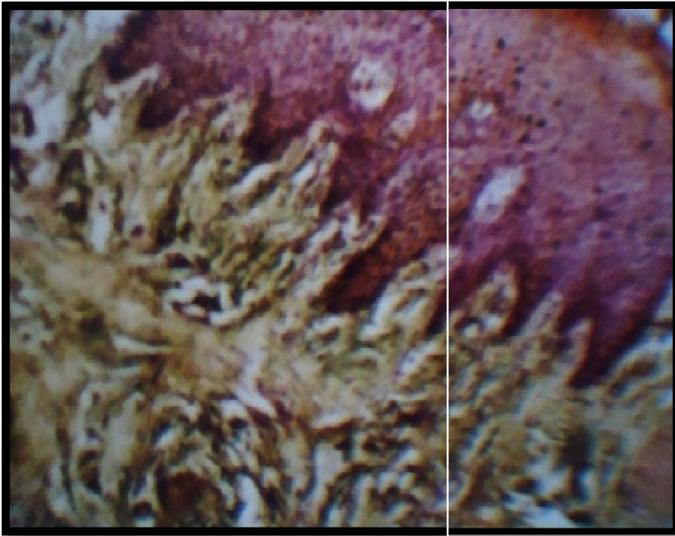
Figure (4),section of vulva mucosa : large size of metaplastic cells with mitotic figure(m).40x H&E.



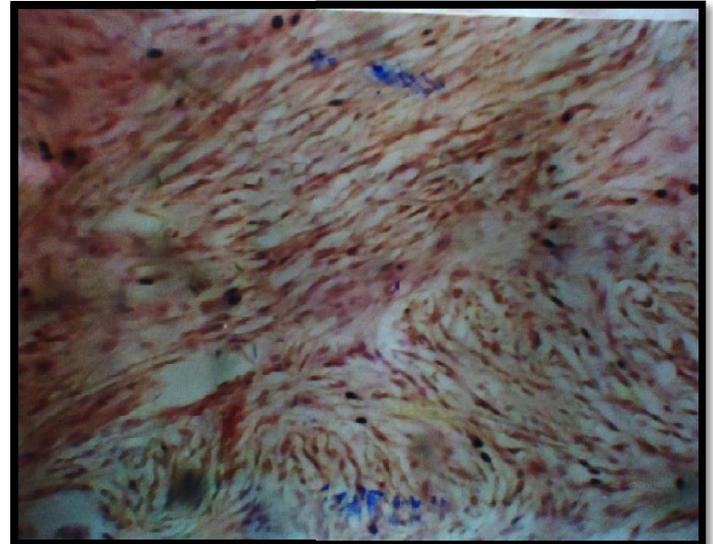
Figure(5),section of vulva mucosa: proliferation ofkeratinized epithelial cells as round mass with pearls center perfuse fibrosis 40x H&E



Figure(6),section of vulva mucosa inflammatory cells with mitotic figure(m) and large epithelial cells(g), 40x H&E



Figure(7),section of fibropapilloma tumor, show epithelial vacuolated connective tissue covered with stratified squamous epithelium of varying thickness 10x H&E



Figure(8),section of fibro papilloma tumor show collagen fibers , fibroblast containnuclei with one or more glassy , weakly stainedeosinophilic, 10x H&E

## **DISCUSSION**

In the latent period there are sorrowful, fearful and high percentage of distribution of different type of cancer in the animals and human in different parts region of Iraq and that percentage upgrade in latent years which are depend on increase promote inflammation and radiation. Therefore , there are thousands factors to developed & progressive of tumors in the body and every parts of Iraq especially in Basra government SCC invasive and occasionally metastatic neoplasm of most domestic species. Sun lights probably the most important carcinogenic stimulant for these tumors (4) due to highly keratinized with invasion of tumors which is arranged in firm nodules or cords , white or yellow-gray homogenous tissue interspersed with areas of hemorrhage and necrosis

separated by white fibrous bands of the soft or firm & dry or moist according to the amount keratin present (11 ,12) . there are another important causes like: Radiation like ultraviolet (UVB) radiation is the most important carcinogenic stimulus for coetaneous SCC . UV light , pyrimidine dimmers ( cytosine , uracil , thymine ) in DNA , nucleotide repair pathway is over whelmed , some DNA damage remains unrepaired , transcriptional errors ,neoplasia . the action of sunlight may be related to over expression of p53 protein as a result of UV-induced mutations of the p53 tumor suppressor genes (14,16) . there is usually a progression , over months to years from epidermal plaques , solar keratosis , and papilloma to carcinomas in situ , and finally to SCC . other associated carcinogens include tobacco , coal tar , soot , arsenic &magma (17) lead to chronic inflammation with necrotic and or hemorrhagic foci , separated by fibrous white- gray bands of stromal connective tissue is less dense and slightly edematous , being intensely vascularized with depending on the intensity of keratinization (18,10), another causes are induce SCC by repeated prolapse of placenta after the end of pregnant period due to induced inflammation(19)fibro papilloma of the upper alimentary canal of cattle which is found in the esophagus , esophageal groove and rumin,showed involvement of the subepithelial fibroblasts as well as of the squamous epithelium lager appear as proliferative epithelium and whorls and fascicles of fibroblasts and collagen caused by bovine papilloma virus is a group of DNA viruses of family papilloma viridae that are common in cattle infection cause fibropapillomas of the rumen , skin , gastrointestinal , urologic and or reproductive organs (9,20).The route of infection of fibropapillomascan spread by physical contact between animals or via equipment such as dehorners or milking machine lead to induce inflammation for long period &gradually there are DNA mutation into the cells .

Although the fibropapilloma cells harbored multiple episomal copies of the genome of bovine papilloma virus type 2(BPV-2) easily detected by hybridization techniques (13) as well as there are many causes like radiation , branches fern which is plant ingesting lead to immunosuppression, (8).

## KNOWLEGEMENT

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### دراسة مرضية نسيجية للورم السرطاني الخلية الحرشفية في الفرج والسرطان الحلبي الليفي في أبقار محافظة البصرة

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### الخلاصة

تم جمع 8 كتل ورمية (3 لحالات مرض سرطان الخلية الحرشفية Squamous cell carcinoma و5 حالات لسرطان الحلبي الليفي للكرش fibropapilloma في الأبقار في محافظة البصرة لفترة بين شباط 2013 الى كانون الثاني 2014 وهما من الحالات المنتشرة في محافظة البصرة وخاصة في الأفضية والنواحي والأماكن الحدودية. كانت حالات سرطان الخلية الحرشفية تتميز بوجود نسيج متجانس ومحدد بطبقات غير منتظمة من النسيج الليفي في الجلد حيث تكون الكتلة الورمية مظهر ناعم وجاف وبيضاء اللون كما تحتوي على مناطق تنخرية قد تشتمل على بؤر نزفية مفصولة بواسطة نسيج ليفي في المرحلة المبكرة لنمو الورم السرطان واما المرحلة المتأخرة تعرف بالمرحلة الشائكة Acanthosis اما النوع الآخر من السرطانات التي درست في هذا البحث السرطان الحلبي الليفي fibropapilloma فقد اظهرت النتائج بوجود التكاثر الخلوي في النسيج الليفي لطبقة الكرش المخاطية والتي تكون مغطاة بخلايا حرشفية طلائية متقرنة والتي كونت غطاءا مختلف التشن وبالتالي اعطت شكلا تقرنيا للسطح الداخلي للكرش

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