

دراسة باثولوجية للجهاز التناسلي لاناث الجاموس  
المصابة بحوصلة " نايوث " فى عنق الرحم

ص . ديب ، م . عمر ، م . الحريرى

من الفحص الميكروسكوبى لعنق الرحم ، الرحم ، وقناة المبيض لعدد خمس من اناث الجاموس المصابة بوجود حوصلة فى عنق الرحم اتضح وجود دلائل التهابات مزمنة فى عنق الرحم يصاحبها ظهور تكوينات من الخلايا الطلائية ذات طبقات متعددة . أظهرت الدراسة أيضا أن الرحم فى هذه الحيوانات يقع تحت تأثير التنبيه الهرمونى . هذه النتائج تدعو الى القول بأن الافرازات المنتجة تحت التأثير الهرمونى تتجمع عند حدوث اصابة والتحام بين طيات عنق الرحم مما يؤدى الى تكون حوصلة " نايوث " فى هذه المواضع .

Dear Mother  
I received your letter of the 10th and was  
glad to hear from you.

I am well and hope these few lines  
will find you the same.

I have not much news to write at present.  
The weather here is very warm and sunny.  
I have been out for a walk every day.  
I hope to see you soon.

Yours affectionately,  
John Doe

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Faculty of Vet. Med., Assiut University,  
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HISTOPATHOLOGICAL STUDY OF THE FEMALE REPRODUCTIVE  
TRACT OF BUFFALOES WITH CERVICAL NABOTHIAN CYSTS  
(With 6 Figures)

By

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SUMMARY

Microscopical examination of the cervix, uterus and fallopian tubes of five buffaloes showing cervical cystic formations revealed the presence of chronic inflammatory changes in the cervix associated with the occurrence of agglomerations of multilayered epithelium; the latter is thought to be proliferating basal cells. In the uterus of some of these cases, faetures of hormonal stimulation were also observed. These results led to the suggestion that accumulation of excessive secretion from hormonally stimulated, previously injured and adherent, cervical rugae may be the mechanism involved in the formation of Nabothian cysts in the cervix.

INTRODUCTION

Gross pathological study of the reproductive tract of slaughter-house material revealed an incidence of 2.1% of Nabothian cysts in the cervix of the Egyptian buffaloes (EL-HARIRI *et al.*, 1980). This pathological condition has been previously recorded both in buffaloes (BHATTACHARYA *et al.* 1954; SHARMA *et al.*, 1966) and cattle (DELANGE, 1950; PERKINS *et al.*, 1954; NAIR and RAJA, 1975). The present work was undertaken in order to correlate lesions in the uterus and fallopian tube with that of the cervix.

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#### MATERIALS AND METHODS

The material consisted of the reproductive organ of five buffalocows collected from the abattoir, all of which showed cystic formations of different sizes in the cervix. After gross examination, tissue samples from the cervix, uterus and fallopian tubes of each case were fixed in formalin solution 10%. These samples were further processed for paraffin embedding. Paraffin sections, 5-7  $\mu$  thick, were stained with haematoxylin and eosin, Mayer's mucicarmine, toluidine blue 1% and methyl green - pyronin stain.

#### RESULTS

Grossly, the cervical wall of all cases examined revealed the presence of cysts with soft consistency, varying in size from one to five centimeters in diameter, and projecting in the cervical canal. On incision, the cystic content appeared clear or slightly yellowish in colour, and was mucinous. In one of these cases, beside having a cyst it showed a prominent nodule of 1 cm in diameter and hard consistency. No other gross lesions were observed in the uteruses, fallopian tubes or ovaries.

Histopathologically, the wall of the cervical cyst was lined with low columnar to high cuboidal epithelial cells having a fine droplets at their apices which showed positive staining reaction with mucicarmine and were metachromatic with toluidine blue. This was externally outlined with thin connective tissue capsule. In other parts of the cervix, the submucosal connective tissue core of the cervical folds (rugae) showed a dispersed plasma cell infiltration. Only in one case that focal accumulation of mononuclear cells was observed (Fig. 1). In three of the five cases examined, polyhedral cells with pale-stained cytoplasm and vesicular nuclei were distributed in agglomerations, more than one-cell layer, between the columnar epithelial cells and the basement membrane along

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the length of the cervical mucosa (Fig. 2). These cells showed no secretory droplets in the cytoplasm. Focal areas of haemorrhage (Fig. 3) and an increased number of plasma cells (Fig. 4) were occasionally observed in the submucosal connective tissue, directly lying around areas of agglomerations. The nodular growth observed grossly in the cervix of one animal consisted of dense fibrous connective tissue mass rich in blood vessels, and was continuous with the submucosal connective tissue of the cervix. The cervical glands were very few and showed no abnormalities.

In the uterus, the endometrium of all except one case revealed slight infiltration of pyroninophilic plasma cells in the connective tissue. The endometrial glands showed a high degree of hyperplasia (Fig. 5). These glands were penetrating deep between the muscle bundles of the myometrium in two of these cases. The cytoplasm of the glandular epithelium was water-clear and unstained due to the presence of basal vacuolation which pushed the nucleus toward the apex. In contrast, the endometrial glands of one case was sclerosed (Fig. 6); the cervical connective tissue of this animal was one which showed focal inflammatory cell infiltration. Also in this animal that an infiltration of plasma cells was observed in the fallopian tube; the latter appeared normal in the other four cases.

## DISCUSSION

The above results led us to suggest that the sequence of events in the development of these cervical cysts involve, primarily, the occurrence of injury and laceration of the surface epithelium, followed by adhesion of one or more adjacent cervical folds (rugae). An indirect evidence of the occurrence of such injuries is given in the present study by the demonstration of proliferating basal cells. These agglomerations of basal cells were not previously observed in normal cervix of ruminants. Under normal conditions, the cervical epithelium in sheep, cattle and buffaloes was recorded to be simple columnar which change to



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the pseudostratified columnar type at the base of the primary folds (MERRICK, 1951; ABU SINEINA, 1964; EL-BAB and EL-NAGGAR, 1975). In man, similar type of cells was observed and referred to as basal or reserve cells (CARMICHAEL and JEAFFRESON, 1939, 1941; HOWARD et al., 1951, HELLMAN et al., 1954; WHEELER and HERTIG, 1955). CARMICHAEL & JEAFFRESON (1941) referred to these cells as reserve depots from which regeneration can occur following damage to the columnar epithelium. The inflammatory changes observed in the present material, in the form of focal infiltration of mononuclear cells in one and dispersed plasma cell infiltration in the others, appears to be secondary. The microscopical picture of the uterus indicated a hormonal stimulation, under which a condition increased secretory activity of the cervical epithelium takes place with accumulation of mucous and distension of the adherent rugae. In buffaloes, it is unlikely that the cysts arise from the mucous glands due to obstruction of the duct by epithelial overgrowth or inspissated mucous as it occurs in man (HAINES and TAYLOR, 1975); these glands were found restricted to the cranial third of the cervix (EL-BAB & EL-NAGGAR, 1975).

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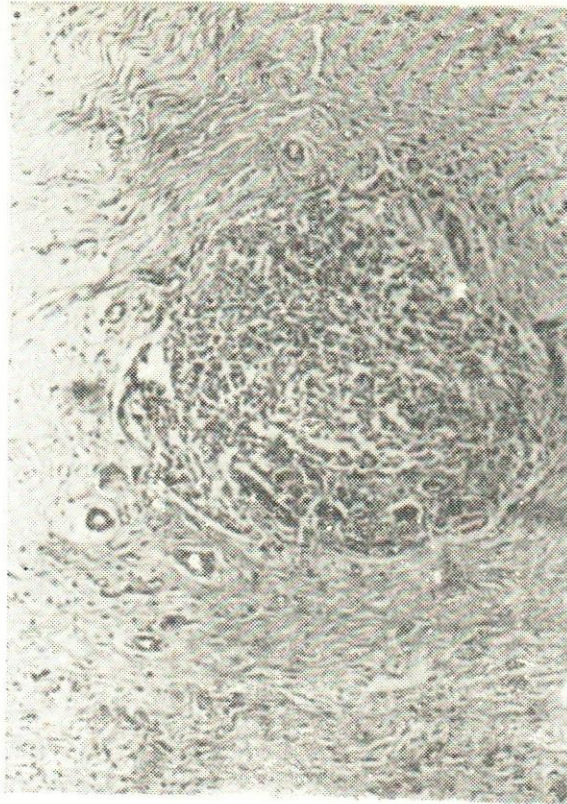
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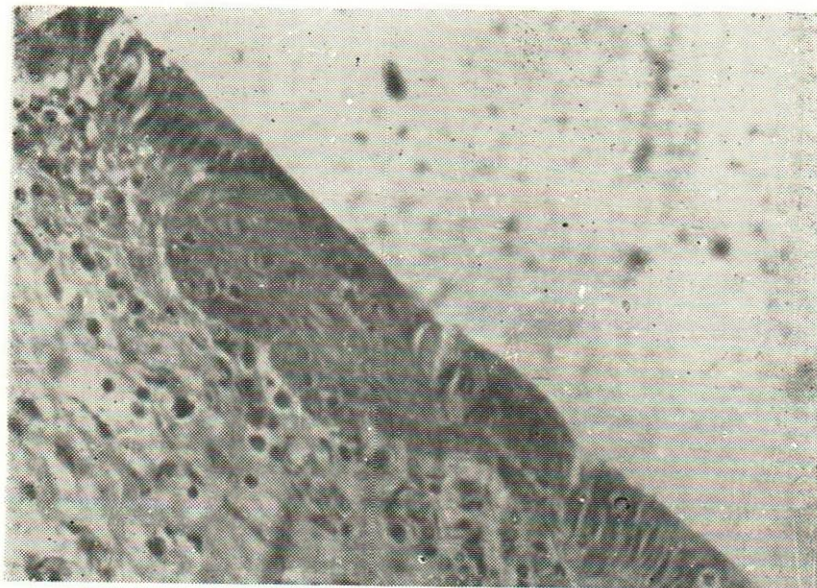
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**Fig. 1 :** Focal accumulation of mononuclear cells in the submucosal connective tissue of the cervix. (X 100)



**Fig. 2 :** The cervix of a buffalo-cow with Nabothian cyst showing proliferation and hypertrophy of the basal cells into relatively large polyhedral cells. (X 400).

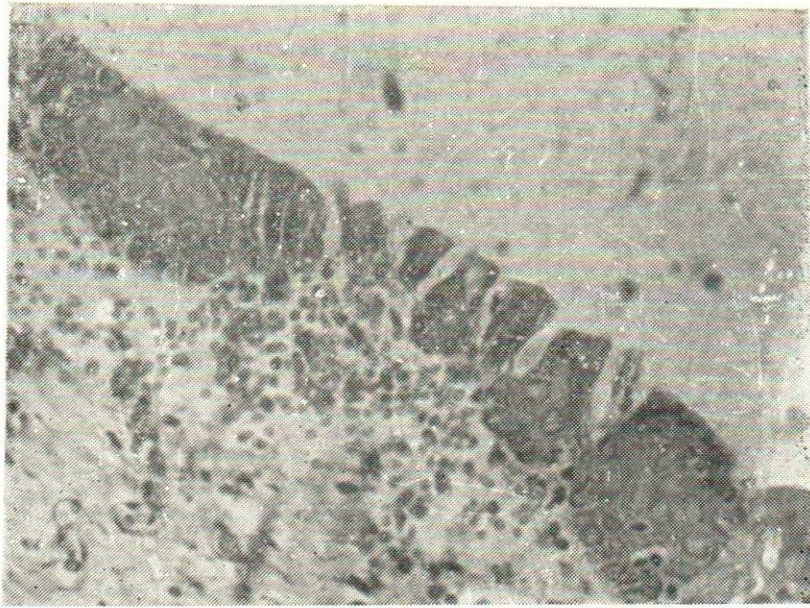
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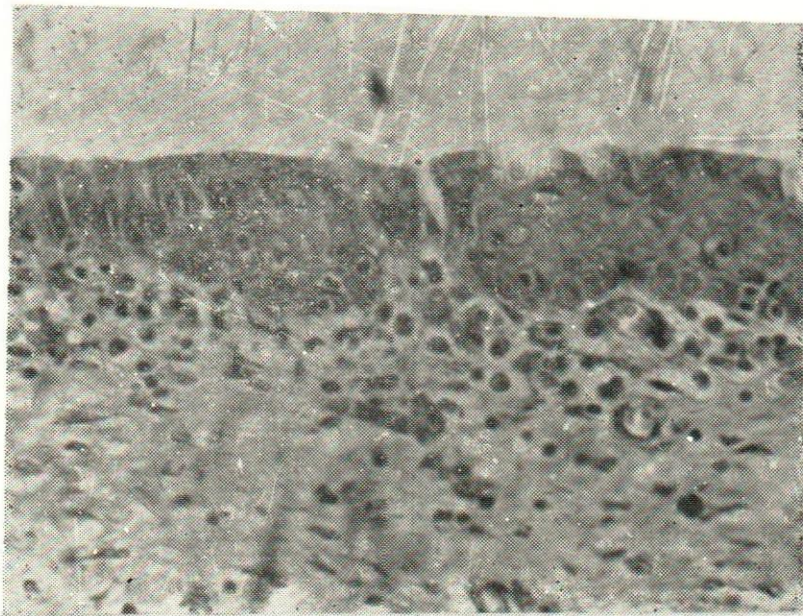
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**Fig 3 :** The cervix of a buffalo-cow with Nabothian cyst. Focal area of haemorrhage, proliferated and hypertrophied basal cells are seen around the lesion (X 400).



**Fig. 4 :** The cervix of a buffalo-cow with Nabothian cyst. Infiltration of plasma cells under the area of proliferating and hypertrophying basal cells. (X 400).

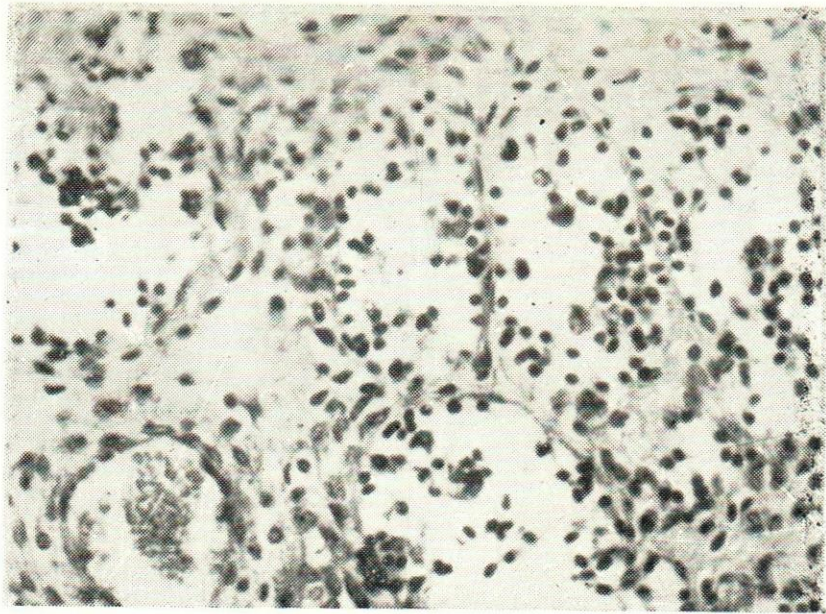


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**Fig. 5 :** The uterus of a buffalo-cow with cervical Nabothian cyst showing hyperplasia of the glandular epithelium in the endometrium. (X 400).



**Fig. 6 :** The uterus of a buffalo cow with cervical Nabothian cyst, periglandular sclerosis. (X 100).

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