تمدد الرحم والنزيف الحوصلي في المبيض لأجنة الجاموس

ص . ديب ، أ . سلامة

تناولت الدراسة ثلاث حالات من أجنة الجاموس ، ظهر على الحالة الاولى منها تمدد مزدوج لقرني الرحم ، ولوحظ في الحالتين الأخريين حدوث نزيف في حوصلة المبايض . وقد أبانت الدراسة عن أن حالات التمدد في الرحم الجنيني من الممكن اعتبارها ثانوية لحدوث ضمور موضعي في جدار الرحم .

أما بالنسبة الى حالات النزيف الذي يحدث في حوصلة المبيض فقد تبين من الدراسة انها غالبا ما تحدث تدريجيا في الحوصلات التي تنمو في المبيض خلال المراحل الجنينية قبل الولادة في الجاموس كنتيجة للتنبيه الهرموني .

Dept. of Pathology,
Faculty of Vet. Med., Assiut University,
Head of Dept. Prof. Dr. A.R. Khater.

SACCULAR DILATATION OF THE UTERUS AND INTRAFOLLICULAR HAEMORRHAGE OF THE OVARY OF THE BUFFALO-FOETUS

(Wit 6 Figures)

By

S. DEEB anf A. SALAMA*

(Received at 19/5/1980)

SUMMARY

Three cases of buffalo foetuses are described; the first case showed a bilateral saccular dilatation of the uterine horns, and the other two showed an intrafollicular haemorrhage of the ovaries. According to our results, dilatation of the foetal uterus observed is considered possibly to be secondary to a partial hypoplasia and thinning of the uterine wall. The intrafollicular haemorrhage appeared to be a gradual process in follicles which grow in the ovaries of this species during the prenatal life, and is suggested to be hormonal-dependant.

INTRODUCTION

In all domestic animals, there are a great variety of abnormal development of the gonads and reproductive tract occurring either singly or in combination,little of these abnormalities are knnown in buffaloes.

The present work deals with the microscopical study of two abnormalities, in the uterus and in the ovaries,of buffalo-foetuses collected from the abattoir.

---

* National Research Centre, Laboratory of Animal Reproduction, Cairo, Egypt.

MATERIALS AND METHODS

The materials consisted of three female foetuses; the first case having a crown-rump (CR) length of 46 cm, and revealed a pale fibrosed liver, slightly enlarged kidneys and cystic dilatation of the uterine horns which began nearly from the middle and extended cranially toward the tips. The horns were distended with a clear fluid that made them prominent and saccular. The second of these cases was a foetus with CR-length of 63 cms., the right and left ovaries were bluish red in colour and each was approximately three-time larger in size than normal ovaries at the same CR-length. The third case consisted of a foetus of CR-length of 71 cm which showed a growing follicle in the right ovary. The latter two foetuses were otherwise normal. The genital organs of all cases were fixed in to in 10% formalin solution and processed for paraffin embedding. Sections, 5-6 u thick, were stained with haemotoxylin and eosin.

RESULTS

The gross appearance of the first case, with the dilated uterus, is shown in (Fig. 1).

Microscopical examination of the uterus of this case showed a thin wall of both horns and the endometrial folds were very shallow or disappeared completely. The surface epithelium of the endometrium had a moderately high active secretory cells with basal vacoulation in the cytoplasm that pushed the nuclei to an upward position. No primordia of uterine glands could be observed in the enometrial stroma (Fig. 2). The connective (mesenchymal) tissue under the surface epithelium was greatly reduced and appeared as a thin strand at the area of the largest dilatation. No muscle fibres were observed in the dilated part, while caudal to this area the muscle layer was incontinuous, and the muscle cells had nuclei of smaller size than normal (Fig. 3). Some of these muscle cells showed granular degeneration. The liver of this animal appeared, on microscopical examination, to have a parenchyma deeply penetrated with

narrow fibrous connective tissue strands originated from the capsule. Degeneration of a small, dispersed number of hepatic cells was observed. The kidneys showed no abnormalities microscopically.

The ovaries of the second case, on section, revealed a relatively large solitary follicle about 6 mm in diameter on the right side,and two small follicles, 2 and 4 mm on the left. Microscopically, the follicular cavities were completely filled with erythrocytes and blood elements in both ovaries (Fig. 4). In the follicles, the cells of the zona granulosa were detached from the basement membrane. The cells of the theca interna did not show any changes, while the theca externa was poorly developed. The blood vessels lying outside to theca interna were dilated and engorged with blood. Likewise, the blood vessels distributed in the ovarian stroma were congested;slight extravasation of erythrocytes were observed in the surrounding tissue. Groups of primary follicles around the dorsolateral circumference of the haemorrhagic follicles, where most of them are normally located, suffered degenerative changes; the nuclei of the layered granulosa-like cells were pyknotic,and the cytoplasm of the germ cells was more eosinophilic while the nuclei showed karyorrhexis. Total disappearance of some germ cells in this area was also observed. The primary follicles that were lying peripheral to this area were normal but showed no growth or activity. The rest of the ovarian stroma at the ventromedial area was reduced and condensed. The tubules of the rete ovarii revealed high ramifications and extended from the hilus of the ovary to occupy a relatively large area of the ovarian stroma (Fig. 6).

The right ovary of the third foetus had a growing follicle of and average diameter of about 5 mm. This follicle revealed, only microscopically, the presence of erythrocytes in its cavity, dilatation of blood vessels of the theca interna, and diapedesis through the follicular wall at many sites (Fig.5).This follicle was lined in its major part with one single layer of granulosa-like cells. Degenerative changes of primary follicles similar to these observed in the second case were also seen.

In the ovary of the third case the rete ovarii also showed abnormal ramification and extension.

DISCUSSION

In the present study, the development of saccular dilatation of the uterine horns observed in the first foetus is suggested possibly to be primarily the result of partial hypoplasia of the uterine wall which becomes dilated under the effect of accumulated mucus. Since the ovaries in this animal revealed no follicular growth, the secretory active uterine eptithelium may be secondary to hormonal infleunce probably of maternal origin. Lesions of the liver appears to have no direct relation-ship with this in the uterus. Similar condition was not described previously in buffaloes. In barren mares, KNUDSEN (1964) described partial uterine dilatation in 40 of 460 animals which become filled with mucoid fluid during diestrus,or possibly with inflammatory exudate after service.

Follicular growth and cystic follicles during prenatal life in buffaloes were earlier observed (GHANNAM and DEEB,1969;DEEB and GHANNAM, 1976); these follicles did not show any signs of luteinization, and ovulation and corpus luteum formation could not be observed. In the giraffe and man, follicular development and luteinization have been seen in the ovaries during prenatal life (POTTER, 1953; KELLAS et al., 1958; AMOROSO and FINN, 1962; PRYSE-DAVIES and DEWHURST, 1971; KAYANJA and BLANKENSHIP, 1973). In man the follicular development of foetal ovaries appears to depend on high serum level of follicular stimulating hormone, which is related in turn to foetal pituitary gonadotropin secretion (REYES,1974). A similar mechanism is possibly responsible for follicular growth in buffalo foetuses, and it can thus be suggested that the pituitary of the late foetal life is able to secrete gonadotropins. The ovaries of both foetuses with intrafollicular haemorrhage showed well-developed rete ovarii. The latter was suggested to be necessary, at least in

the mouse, for follicular maturation (HARRISON and WEIR, 1977).

Failure of the Graafian follicles in buffalo-foetuses to ovualte or to undergo luteinization, similar to that found in the Giraffe and man, has been early (DEEB and GHANNAM, 1976) attributed probably either to an inadequate level of luteinizing hormone and/or that there is a decreased response of the foetal ovary, which is subjected to oestrogen of maternal origin, to the effect of this hormone. As much as can be concluded from our results, the intrafollicular haemorrhage observed in the present study appeared to be not an abrupt change, but a gradual one. Similar fate,i.e. haemorrhage, was observed by MACKENZIE and EDEY (1975) to affect large unruptured ovarian follicles which coexist with normal developing corpus luteum early in the oestrus cycle of the ewe. Dilatation and increased permeability of the blood vessels of the follicular wall seen in these ovaries may be a hormonally-depnedant process.

REFERENCES

Amoroso,E.C. and C.A.Finn. (1962): Ovarian activity during gestation, ovum transport and implantation. In, Zuckerman,S. (Ed.), " The Ovary " 1st ed., Vol; 1, pp 351-437, Acad. Press, New York.

Deeb,S. and S.A.M.Ghannam. (1976): Malformations of foetal ovaries in buffaloes. 13th Arab Vet.Med.Congr., Cairo 13-18 Nov.,pp 335-351.

Ghannam,S. and S.Deeb. (1969): Prenatal development and activities of the ovaries in buffaloes. J.Vet.Sci., 1: 105.

Harrison,R.J. and B.J.Weir.(1977): Structure of the mammalian ovary. In, Zuckerman,L. and B.J.Weir (Eds.); "The Ovary", Vol. 1, pp 113, Acad. Press.

Kayanja,F.I.B. and L.H.Blankenship. (1973): The ovary of the Giraffe, Giraffe cameloparadalis. J.Reprod.Fert., 34: 305-315.

Kellas,L.M., E.W.van Lennep and E.C.Amoroso, (1958): Ovaries of some foetal and prepubertal giraffes (Giraffa cameloparadalis,

linnaeus). Nature, Lond., 181: 487-488

Knudsen,O. (1964): Cornell Vet., 54: 423.

Mackenzie,F. and T.N.Edey. (1975): The fate of large "cystic" ovarian follicles in sheep. J.Reprod.Fert., 43: 393-394.

Potter,E.L. (1953): Pathology of the Foetus and Infant. Yearbook Publ., Chicago, Ill.

Pryse-Davies,J. and C.J.Dewhurst. (1971): The development of the ovary and uterus in the foetus, newborn and infant: A morphological and enzyme histochemical study. J.Pathol., 103: 5-25.

Reyes,F.I., R.S. Boroditsky, J.S.D.Wo,ter a,d C.Faiman. (1974): Studies on human sexual development. II. Fetal and maternal serum gonadotropin and sex steroid concentration. J.Clin.Endocrinol. Meta., 38: 612-617.

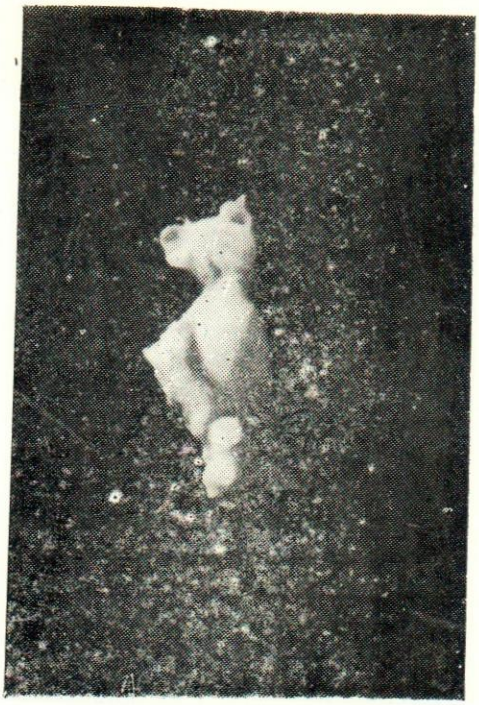

Fig. 1 : Reproductive organs of a buffalo foetus (CR 46 cm) showing a bilateral partial dilatation of the uterine horns.

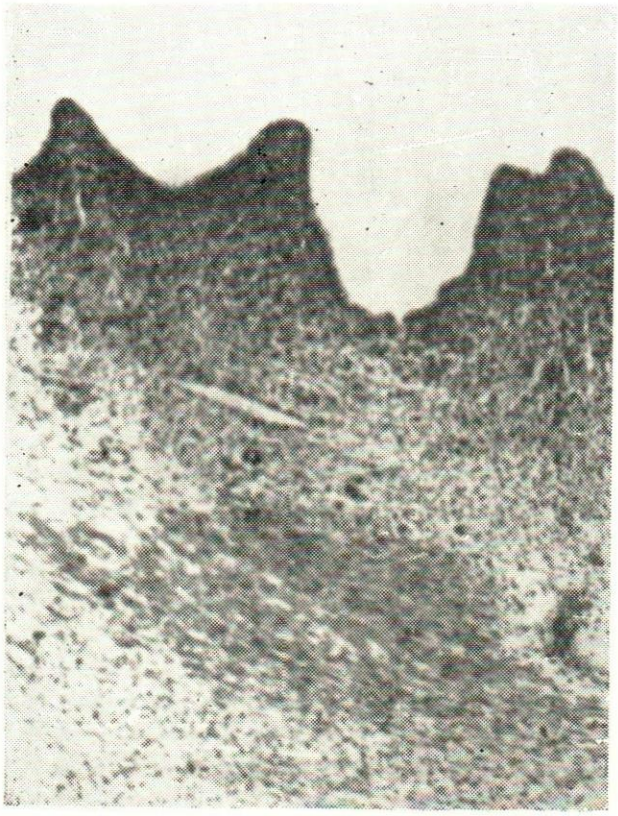

Fig. 2 : Cross-section of the uterus of a buffalo foetus (CR 46 cm) caudal to the most dilated part showing a considerably shallow endometrial folds, (X 100).

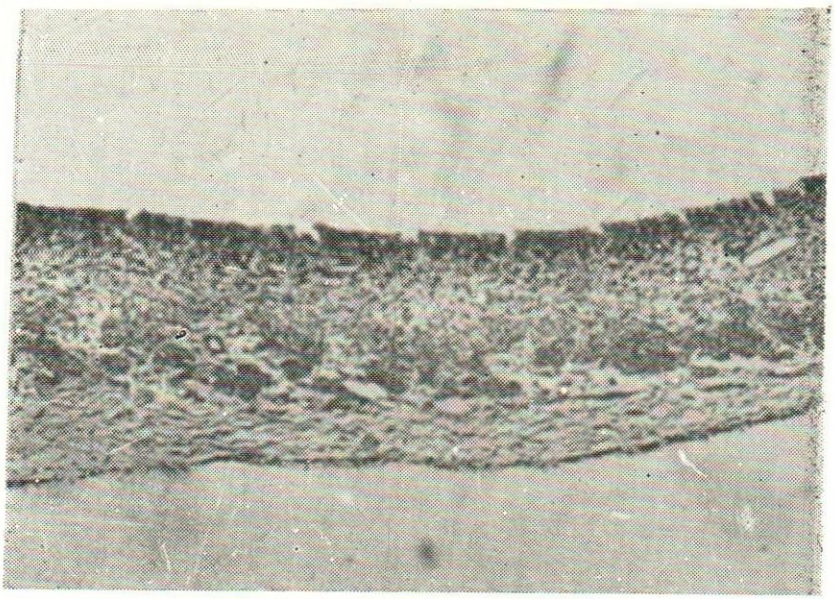

Fig. 3 : Longitudinal section of the uterus of a buffalo foetus (CR 46 cm). a-A narrow endometrium and thin, intermittant myometrium. b-A most caudal part near the cervix showing shallow endometrial folds. (X 100).

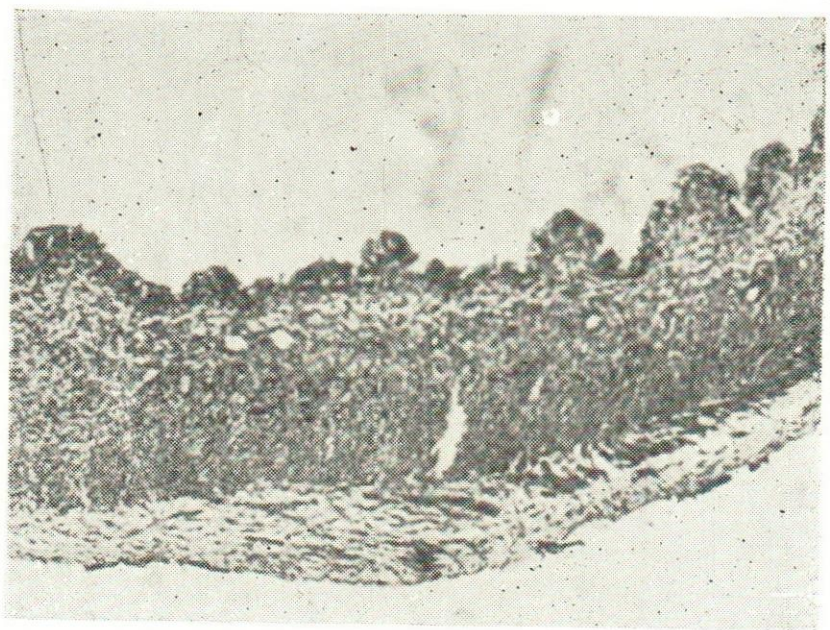

Fig. 4 : Section of the ovary of a buffalo foetus (CR 63 cm). the follicular cavity is filled with erythrocytes (arrow). (X 100).

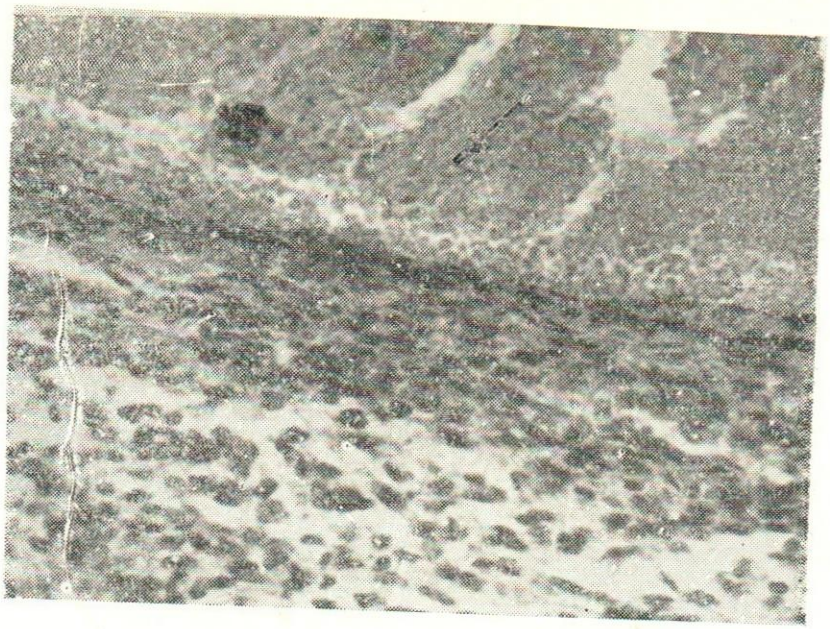

Fig. 4 : Section of the ovary of a buffalo foetus (CR 63 cm). the follicular cavity is filled with erythrocytes (arrow). (X 400).

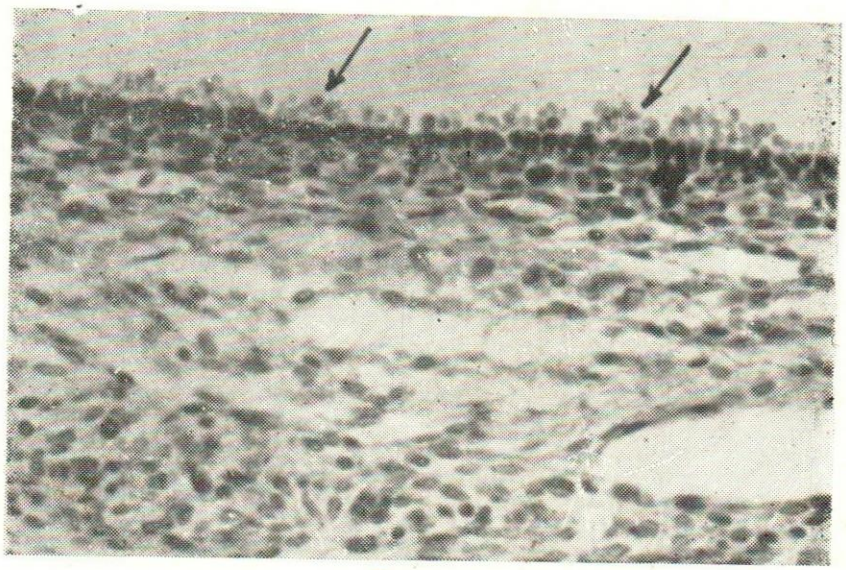

Fig. 5 : Section of the ovary of a buffalo foetus (CR 71 cm) showing a single layer of granulosa-like cells linning a follicle with many diapedesis of erythrocytes (arrow). (X 400).

Fig. 6 : Section of the ovary of a buffalo foetus (CR 71 cm) showing considerable ramification of rete ovarii (X 100).