

**POSTNATAL HISTOLOGICAL DEVELOPMENT OF THE MALE REPRODUCTIVE ORGANS IN BARKI SHEEP:
(a) HISTOLOGICAL DEVELOPMENT OF TESTIS, EPIDIDYMIS, DUCTUS DEFERENCE AND PENIS**

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SUMMARY

This study was carried out at Maryout research station which belongs to the desert research center located 30 km southwest Alexandria. Twenty seven pure Barki ram lambs, one month old were used to study postnatal changes in testis, epididymis, ducts deferens and penis of male Barki organs. Three lambs were slaughtered at 1, 3, 6, 8, 10, 12, 14, 16 and 18 months of age to study histological changes.

Histological examination showed that, the diameter of seminiferous tubules was significantly affected ($P < 0.05$) by age of animals. The percentage of seminiferous tubules contained spermatozoa, increased from 13.3% at 10 months to 90.1% at 14 months of age. The epididymal duct reached its maximum value (607μ) at 14 months of age. The percentage of epididymal duct containing spermatozoa increased from 33.3% at 8 months to 100% at 14, 16 and 18 months of age. The vas deferens mucosa lined by pseudostratified columnar epithelium. The epithelium height increased by age reached its maximum (126.7μ) at 14 months of age and then decreased. Age of ram lambs had a significant influence ($P < 0.01$) on penis cross-sections, diameters of corpora cavernosus penis and diameters of corpus cavernosum urethra.

Keywords: postnatal changes, histology, testis, epididymis, ductus deference, penis, farm animals, sheep

INTRODUCTION

Barki sheep is a fat-tailed coarse wool breed raised primarily under the semi-arid conditions.

High reproductive performance is a key factor that contributes the success of farm animal productivity which depends on other factors like male fertility, particularly when limited mating season applied. Understanding some of the basic histological changes of male organs is important in planning the management systems and use of rams in sheeps flocks.

The aim of this work is to study the postnatal histological changes of testis, epididymis, ductus deferens and penis of male Barki sheep. Tharwat, (1985) and

Saad, (1989) found that age and weight influence the postnatal histological changes in sheep and goats.

MATERIALS AND METHODS

This experiment was carried out at Maryout Research Station (Desert Research Center). Twenty seven pure Barki male lambs were left to suckle their dams freely up to the time of weaning at 3 months of age. The lambs started from about the 2nd week of age to pick berseem. Concentrate ration was offered to animals twice daily at 8 am and 3 pm. This concentrate mixture contained 15% crude protein and 14.5% crude fibers. The animals were allowed to drink after 1-2 hours of feeding.

Nine groups of three animals each were slaughtered at 1, 3, 6, 8, 10, 12, 14, 16 and 18 months of age, respectively.

Each animal was weighed before being sacrificed. Genital organ (testis, epididymis, ducts deferens and penis) were removed immediately after slaughtering and fresh samples were taken for histological study. The samples were fixed in 10% formalin, dehydrated in ascending grades of ethyle alcohol, cleared in xylene, saturated by soft paraffin wax (M.P. 50°C) then embedded in hard paraffin wax (M.P. 55°C) and sectioned at 5-4 μ thickness using a rotary microtome and stained with haematoxylin and eosin. Several histological observations were recorded using a research light microscope and Carl Zeiss ocular micrometer as follows:

1. The testis.

* Ten seminiferous tubule sections in each slide were chosen at random and examined for:

- a. Largest and smallest diameters of seminiferous tubule (S.T.)
- b. Height of epithelium lining the (S.T.)
- c. Number of spermatogenic layers.
- d. Percentage of seminiferous tubules contained spermatozoa,
- e. Number of interstitial cells of ten interstitial islets.

2. The tail of epididialymis

* Ten epididymal duct sections in each slide were chosen at random to study:

- a. Largest, smallest diameter and height of epithelium lining the epididymal duct.
- b. Wall thickness of the duct and type of epithelium lining it.
- c. Percentage of epididymal ducts contained spermatozoa.

3. The ducts deferens:

- a. Thickness of mucosa.
- b. Height and type of epithelium lining the duct.
- c. Largest and smallest thicknesses of fibrosa and muscular layer.
- d. Largest and smallest diameters of lumen of the duct.

4. The Penis

The largest and smallest diameter of cross section.

The largest and smallest diameter of corpora cavernosus penis.

The largest and smallest diameters of corpus spongiosum.

Statistical analysis:

Statistical analysis of the different measurements obtained was performed according to SAS, (1989). Statistical analysis included analysis of variance (ANOVA) one way classification, Duncan's Multiple Range test, and correlation coefficient.

RESULTS AND DISCUSSION**Effect of age on histological changes.****1. Testis**

Mean histological parameters of the testis during different growth age of Barki ram lambs are presented in table 1. Seminiferous tubules at one month age were solid cords, which contain supporting cells of gonocytes (Plate 1). Small lumen was observed at three months of age although, there were some increase in histological parameters of testis at this age (Table 1). At 6 months of age, the diameters of the seminiferous tubule increased, (Plate 2), Inagreement of these results Bongso *et al.* (1982) on cross bred bucks, they noticed that a sudden increase in tubular diameter at 6 months of age (116.5 μ). The average largest, smallest diameter and height of epithelium lining the seminiferous tubule were 133.40, 89.00 and 18.70 μ respectively. The average number of epithelial layers in the seminiferous tubules was 2.33 layer. The average number of leyding cells in each islet was 33.20 cells (Table 1). Aire, (1973) reported that the diameter of seminiferous tubules at the age of 24 weeks was 245.5 μ in Dwarf Nigerian ram lamb and Tharwat, (1985) found that seminiferous tubule diameter in Barki ram lambs was 149.131 μ at about 6.3 months. These estimates were higher than that reported in the result (133.40 μ). Zaki, (1971) in buffalo bulls, found that number of interstitial cells in each islet averaged 35.0 cell. This result was very close to our result.

At 8 months of age, one ram lamb had spermatozoa the lumen of seminiferous tubules. The other two lambs had seminiferous tubules contained spermatocytes (Plate 3). The average largest and smallest diameters and height of epithelium lining seminiferous tubules were 176.60, 100.03 and 23.57 μ , respectively. The average number of epithelial layers in seminiferous tubule was 3.43 layer. The average of leyding cells in each islet was 30.07 cell. the percentage of seminiferous tubule containing sperms was 26.67% (Table 1). Hassan *et al.*, (1984) also reported that at 7 months of age testes showed a marked increase in seminiferous tubule diameters and luminal cavity inspite of the increase in thickness of tubular wall with sperm appearance in Barki ram lambs.

At 10 months, seminiferous tubule increased in diameter. The average largest and smallest diameter and height of epithelium were 227.90, 140.43 and 28.73 μ , respectively. The average number of epithelial layers and leyding cells were 3.17 layer and 21.6 cell. The percentage of seminiferous tubules containing sperms was 13.30% (Table 1).

At 12 months of age there were only slight increase in seminiferous tubule diameter (the largest) and the height of epithelium lining the seminiferous tubule, (Table 1).

Table 1. Least square means \pm SE for some histological parameters of testis during different ages in growing Barki ram lambs

Parameters	Age (month)										SE
	1	3	6	8	10	12	14	16	18	18	
Seminiferous tubule (μ)	L.D.	78.93 ^E	82.67 ^E	133.40 ^D	176.60 ^C	227.90 ^B	228.07 ^B	301.80 ^A	256.10 ^B	313.00 ^A	10.51
	S.D.	51.70 ^F	52.77 ^F	89.00 ^E	100.00 ^E	140.43 ^D	158.57 ^C	219.10 ^A	199.57 ^B	227.17 ^A	4.40
No. of germinal epith. layers	H.E.	9.17 ^F	8.93 ^F	18.70 ^E	23.57 ^D	28.73 ^C	29.87 ^C	54.70 ^A	47.20 ^B	54.67 ^A	1.36
		1.30 ^F	1.33 ^F	2.33 ^E	3.43 ^D	3.17 ^D	4.27 ^C	6.17 ^B	5.70 ^B	6.97 ^A	0.17
% of S.T.containing spermatozoa	0.0	0.0	0.0	26.67 ^C	13.30 ^C	40.00 ^B	96.67 ^A	90.00 ^A	96.67 ^A	14.25	
No. of Leydig cells in each islet	27.43 ^{ED}	28.83 ^D	33.20 ^{CBDD}	30.07 ^{CD}	21.60 ^E	28.83 ^D	36.83 ^{CB}	39.40 ^B	50.20 ^A	2.23	

- Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at 5% level.

- S.T. = Seminiferous tubule.

- S.D. = Smallest diameter.

- L.D. = Largest diameter.

- H.E. = Height of epithelium.

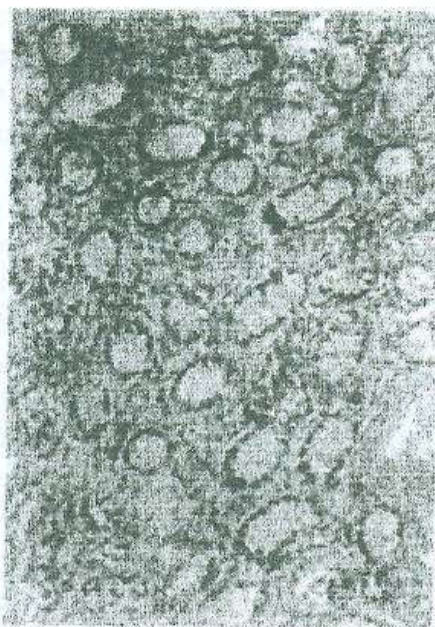


Plate 1: Cross - section in testis of one month Barqi ram lamb (X 120)

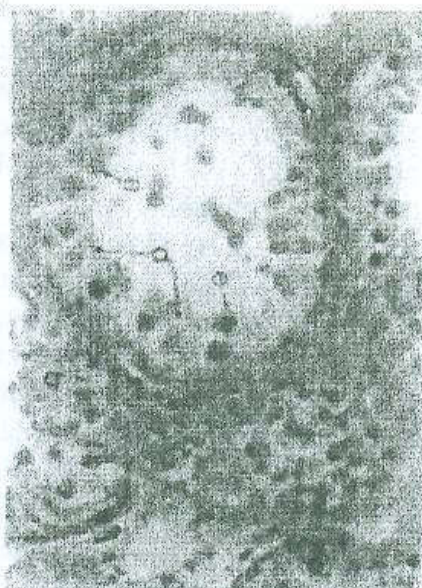


Plate 3: Cross - section in testis of 8 months Barqi ram lamb (X 270)
d: primary spermatocyte. e: Secondary spermatocyte.

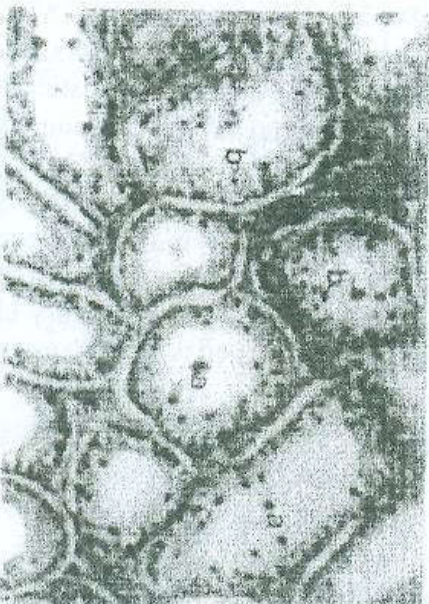


Plate 2: Cross - section in testis of 6 months Barqi ram lamb (X 120)
a: gonocyte b: Sertoli cells c: Leydig cells.

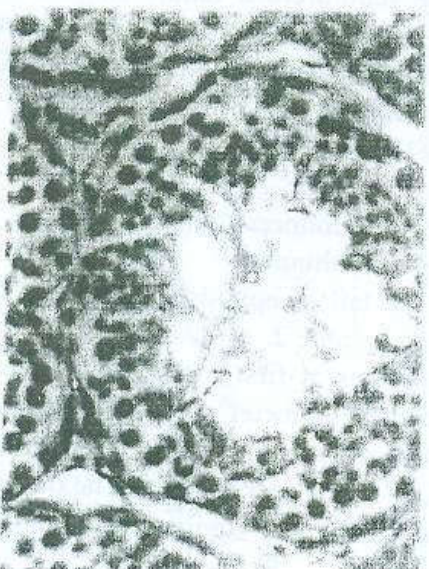


Plate 4: Cross - section in testis of 14 months Barqi ram lamb (X 480)
f: spermatide g: Sperms

All plates stained with Haematoxylin and Eosin

At 14, 16 and 18 months of age, seminiferous tubules reached their maximum activity (Plate 4). The average largest, smallest diameters and height of epithelium lining the seminiferous tubule were 301.80, 219.10, 54.70; 256.10, 199.57, 47.20 and 313.00, 227.17, 54.67 μ at 14, 16 and 18 months of age, respectively. The difference between (14, 16) and between (16, 18) months of age were statistically significant ($P < 0.05$ table 1). The average number of epithelial layers and number of leyding cells in each islet were 6.17, 5.70, 6.97 layer and 36.83, 39.40, 50.20 cell at the three age groups, respectively. The percentages of seminiferous tubules containing spermatozoa were 96.67, 90.00, 96.67% at 14, 16 and 18 months of age respectively. The differences between (14, 18) and between (16, 18) months of age were statistically significant ($P < 0.05$) (Table 1). Present results were very close to those recorded in adult buffalo bulls by Abdel-Baky, (1993) who found that, overall averages for largest and smallest diameters of the seminiferous tubule were 311.9 5.6 and 130.4 3.4 μ , respectively. On the other hand, the average percentage of seminiferous tubules containing sperms at 14, 16 and 18 months of age was also very close to that reported by the same author, who found that the average percentage of seminiferous tubules containing sperms was $90.1 \pm 3.8\%$. Zaki, (1971) mentioned that the number of interstitial cells averaged 35.0 cells which in agreement with the present study.

The results indicated that largest, smallest diameters, height of epithelium, number of epithelial layers lining the seminiferous tubule and number of leyding cells in each islet were significantly increased ($P < 0.01$) with advancement of age. These results are in agreement with findings reported by Carmon and Green, (1952); Monet-Kuntz *et al*; (1984); Eechtern and Lunstra, (1984); Tharwat, (1985); Saad, (1989); Zaki, (1971) and Abdel-Baki (1993).

Tail of epididymis:

The tail of epididymis is covered by connective tissue capsule similar to the tunica albuginea of the testis but some what thinner.

Mean histological parameters of the tail of epididymis during different ages in growing Barki ram lambs are presented in table 2.

Histological examination of epididymis at first 6 months of age indicated that there was an increase in epididymal duct diameter with advancement of age. The average largest and smallest diameter of 1, 3 and 6 months of age were 163.20, 227.20, 229.40 μ and 119.60, 210.50, 175.50 μ , respectively. The differences between (1,3) and (1, 6) months of age were statistically significant ($P < 0.05$) (Table 2 and Plates 5, 6).

The differences among the first three age groups 1, 3 and 6 months (smallest diameter) were statistically significant ($P < 0.05$ Table 2). Saad, (1989) reported that, the average diameter of epididymal duct was 107.29, 154.02 and 265.84 μ in sheep and 100.06; 281.45 and 529.93 μ in goats at birth, 2 and 4.5 months of age, respectively. The height of epithelium lining the duct was 13.75, 23.28 and 32.66 μ in sheep at the same age groups.

From 8 months up to 14 months of age there was a marked increase in the epididymal duct diameter (Table 2 and Plates 7,8).

Table 2. Least square means \pm SE for some histological parameters of epididymis during different ages in growing Barki ram lambs

Parameters	Age (month)										SE
	1	3	6	8	10	12	14	16	18	18	
Epididymal	L.D.	163.20 ^F	227.20 ^F	229.40 ^E	436.00 ^{CD}	408.33 ^D	511.83 ^B	607.37 ^A	409.20 ^D	463.83 ^{CB}	17.55
	S.D.	119.60 ^G	210.50 ^E	175.50 ^F	316.53 ^D	302.07 ^D	392.07 ^B	449.67 ^A	324.87 ^{CD}	353.07 ^C	12.08
Duct section (μ)	T.W.	47.10 ^D	56.90 ^{CB}	68.63 ^A	59.93 ^B	69.20 ^A	52.40 ^{CD}	54.80 ^{CB}	58.20 ^{CB}	60.93 ^B	2.07
	H.E.	27.83 ^B	36.47 ^{CB}	44.37 ^A	33.33 ^{CD}	38.67 ^B	28.80 ^E	31.03 ^{ED}	30.80 ^{ED}	35.30 ^{CB}	1.41
% of epididymal duct containing spermatozoa	0.0	0.0	0.0	33.33 ^B	0.0	43.33 ^B	100.00 ^A	100.00 ^A	100.00 ^A	100.00 ^A	15.47

• Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at 5% level.

- L.D. = Largest diameter.

- T.W. = Thickness of duct wall.

- S.D. = Smallest diameter.

- H.E. = Height of epithelium.

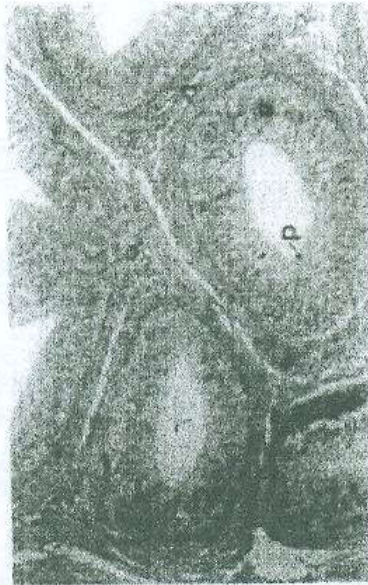


Plate 5: Cross-section in epididymis of one month Baraki ram lamb (x 120)
a: Stratified epithelium b: Circular muscle layer

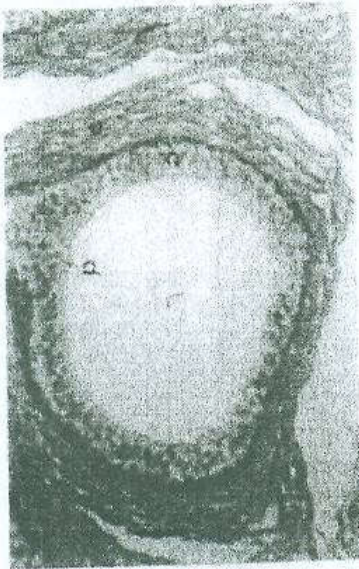


Plate 6: Cross-section in epididymis of 6 months Barki ram lamb (x 120)
c: Pseudo stratified epithelium d: Cilia

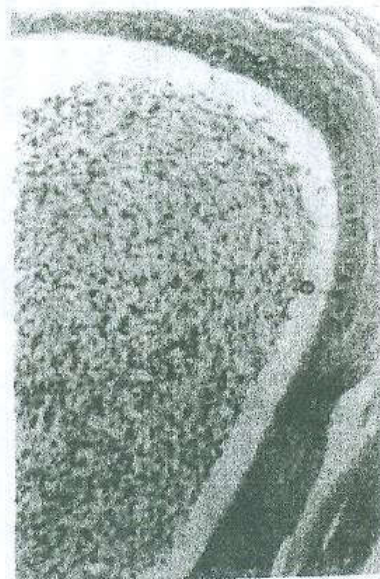


Plate 7: Cross-section in epididymis of 8 months Barki ram lamb (x 480)

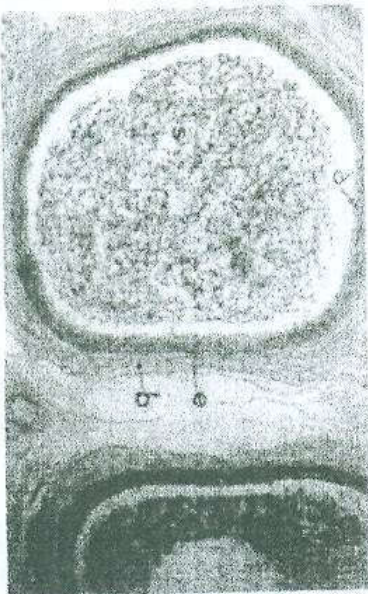


Plate 8: Cross-section in epididymis of 14 months Barki ram lamb (x 270)

At 8 months of age, one ram lambs reached puberty, all the epididymal duct sections had distinct crowding of spermatozoa (Plate 7).

The other two ram lambs were without any sperms in their ducts lumen. The average height of epithelium lining the epididymal duct and thickness of the duct wall were present in (Table 2). The epididymal duct reached its maximum value (607.4 μ) at 14 months of age (Table 2).

Nilnophakoon, (1978) found that Swedish lambs attained the adult histological type of epididymis when they were about 18 weeks old. On the other hand. Harshan *et al.*, (1978) observed spermatozoa at 165 days of age in Malabari bucks.

At 16 and 18 months of age a decrease in the epididymal duct diameter occurred and also the height of epithelium lining the duct became simple low columnar. This may be due to the increase of spermatozoa stored in the duct. The percentage of epididymal duct containing spermatozoa was 100% at the two age groups which means that animals reach sexual maturity. Abdel Baky, (1993) reported that average percentage of epididymal duct sections containing sperms was 95.7 \pm 2.2% in buffalo bulls.

The present study indicated that age of ram lambs had a significant ($P < 0.01$) influence on largest and smallest diameters of epididymal duct, height of epithelium lining the duct and thickness of duct wall. These were in agreement with the findings reported by Yao and Eaton, (1954) in goats and Saad, (1989) in sheep and goats.

Vas (Ductus) deference:

The vas deference mucosa was lined by a pseudostratified columnar epithelium (Plates 9 and 10). Mean histological parameters of vas deferens during different ages in growing Barki ram lambs are presented in table 3.

The average largest thickness of mucosa ranged between 54.7 and 126.7 while the average smallest thickness ranged between 32.0 and 64.0 μ .

The differences among age groups were not statistically significant while, the differences between (12, 14) and between (14, 18) months of age were statistically significant ($P < 0.05$) (Table 3).

Abdel-Baky, (1993) in buffalo bulls found that, thickness of mucosa of the vas deference ranged between 73.1 and 127.5 μ with an average of 102.8 μ . The present estimates (Table 3) lie within this range.

Present results (Table 3) indicated that the epithelium height increased gradually from 42.0 μ at three months of age 56.0 μ at twelve months, then jumped to 95.3 μ at fourteen months and decreased gradually to reach 43.0 μ at eighteen months of age. This variation may be due to increase the secretory activity of the vas deferens mucosa during puberty. After puberty the stored spermatozoa in the vas deferens lumen caused a reduction in epithelial height. The differences between 14 months of age and each of the other age groups were statistically significant ($P < 0.05$) except the difference between (14 and 16) months of age which was not significant (Table 3).

In ram lambs, Saad, (1989) reported that the height of epithelium lining of the vas deferens averaged 24.23, 33.32 and 42.95 μ at birth 2 months and 4.5 months of age respectively. The average estimates reported here at 3 and 18 months of age was as that reported by the previous author at 4.5 months of age.

Table 3. Least square means \pm SE for some histological parameters of vas deferens during different ages in growing Barki ram lambs

Parameters	Age (month)										SE
	3	6	8	10	12	14	16	18			
Thick of Fibrosa (μ)	L.T.	941.3 ^A	973.7 ^A	398.7 ^B	593.3 ^B	436.7 ^B	722.3 ^{AB}	1072.0 ^A	1003.0 ^A	110.3	
	S.T.	100.0 ^{ABC}	104.3 ^{ABC}	64.0 ^C	77.3 ^C	65.3 ^C	178.3 ^A	189.7 ^A	87.7 ^{BC}	28.3	
Thick of Musculosa (μ)	L.T.	334.0 ^C	633.3 ^{AB}	452.3 ^{BC}	757.3 ^A	617.0 ^{AB}	838.3 ^A	588.7 ^{AB}	614.7 ^{AB}	77.5	
	S.T.	245.7 ^C	402.0 ^{ABC}	353.0 ^{BC}	570.0 ^A	374.3 ^{BC}	503.7 ^{AB}	312.0 ^C	309.0 ^C	56.5	
Thick of Mucosa (μ)	L.T.	64.0 ^B	76.0 ^B	81.0 ^B	79.3 ^B	71.0 ^B	126.7 ^{AB}	92.7 ^{AB}	54.7 ^B	11.7	
	S.T.	38.3 ^{AB}	41.30 ^{AB}	51.00 ^{AB}	46.7 ^{AB}	32.0 ^B	64.0 ^A	58.0 ^{AB}	34.0 ^B	8.3	
Lumen Diameter (μ)	L.T.	225.0 ^C	282.70 ^{BC}	730.70 ^A	315.0 ^{ABC}	556.3 ^{ABC}	347.3 ^{ABC}	512.0 ^{ABC}	665.7 ^{AB}	127.9	
	S.T.	58.3 ^A	106.0 ^A	107.30 ^A	54.6 ^A	67.7 ^A	64.0 ^A	55.7 ^A	72.0 ^A	24.3	
Height of epithelium (μ)	L.T.	42.0 ^B	51.7 ^B	52.0 ^B	56.0 ^B	56.0 ^B	95.3 ^A	71.0 ^{AB}	43.0 ^B	10.62	

- Within each row, means bearing the same letter do not differ significantly from each other, otherwise they differ significantly at 5% level.

- L.T. = Largest thickness.

- S.T. = Smallest thickness.

- Thick = Thickness.

- L.D. = Largest diameter.

- S.D. = Smallest diameter.

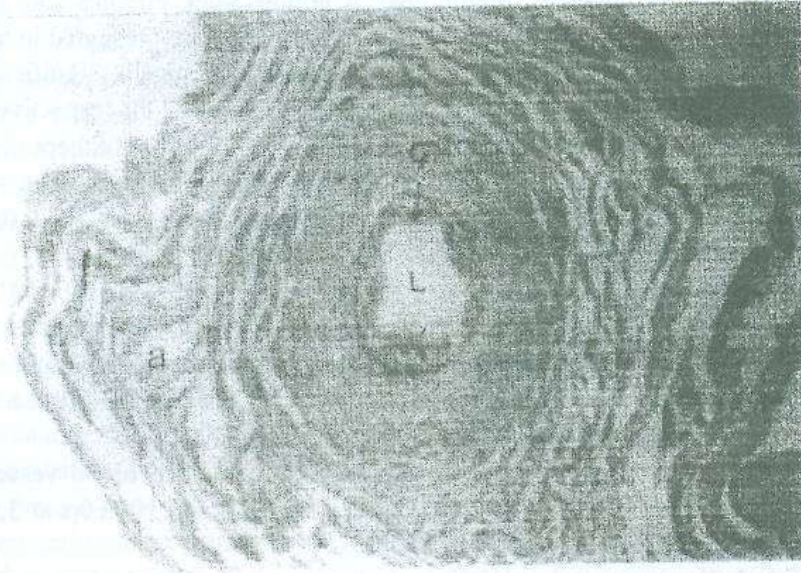


Plate 9: Cross-section in vas deferens of 3 months Barki ram lamb (x 120)
a: Fibrosa b: muscle layer c: mucosa

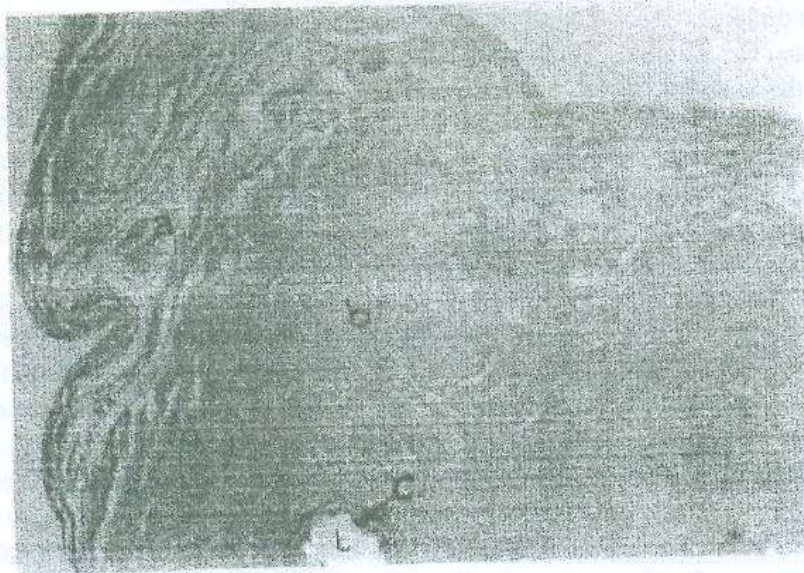


Plate 9: Cross-section in vas deferens of 6 months Barki ram lamb (x 120)
L: Lumen

All plates stained with Heamatoxlyin and Eosin

The muscosa was the thickest coat of vas deferens wall. It consisted of three smooth muscle layers an inner longitudinal, a middle thick circular and an outer longitudinal. The averages largest thickness of muscle layer are presented in table 3.

The differences among these age groups were not statistically significant. The average thickness at 3 and 8 months of age was 334.0 and 452.3 μ respectively. The differences between 3 months of age and all the other age groups, except the group of 8 months of age were statistically significant ($P < 0.05$, Table 3). The smallest thickness of muscle layer ranged between 245.7 μ at 3 months and 570.0 μ at 10 months of age.

The average largest lumen diameter of the vas deferens was 282.7, 315.0, 556.3, 347.3, 512.0 and 665.7 μ at 6, 10, 12, 14, 16 and 18 months of age, respectively. The differences among these age groups are presented in table 3. The average smallest diameter of the lumen ranged between 54.6 μ at 10 months and 107.3 μ at 8 months without significant differences among all age groups (Table 3).

The fibrosa consisted of connective tissue and it contained blood vessels. The average largest thickness was 941.3, 973.7, 722.3, 1072.0 and 1003.0 μ at 3,6,14,16 and 18 months of age respectively.

In buffalo bulls, Abdel-Baky, (1993) reported that the largest thickness of fibrosa ranged between 498.7 and 777.7 μ with an average of 654.2 μ . The present estimates of this parameter were higher than that reported by the previous author.

The present results indicated that age of ram lambs had a significant ($P < 0.01$) influence on largest and smallest thickness of muscosa, largest thickness of mucosa and fibrosa. On the other hand, animal age had significant ($P < 0.05$) influence on the smallest thickness of fibrosa and height of epithelium lining the duct. However, age of lambs was without significant influence on largest and smallest diameter of the duct lumen and smallest thickness of mucosa. Contrary, Saad, (1989) reported that the diameter of the lumen increased with age. In goats, Yao and Eaton, (1954) reported that there was no conspicuous differences in the structure and dimensions of ductiy deferens between kids of different ages.

Penis

The ram lamb penis formed of three cylindrical bodies of erectile tissue; the paired corpora cavernosa penis dorsally and the single corpus cavernosum urethra corpus (spongiosum) ventrally. The paired corpora cavernosa penis are separated from each other proximally but join beneath the pubic angle and run forward together. The three cylindrical bodies are surrounded by subcutaneous tissue which contains many smooth muscle fibers. Each cylinder of the corpus cavernosa penis is surrounded by a thick fibrous sheath of, the tunica albuginea. Trabeculae continuous with the fibrous sheath, consist of collagenous, elastic and smooth muscle fibers and form dens internal framework. The spaces between the framework are lived by a thin squamous endothelium and constitute the blood sinuses. The tunica albuginea of the corpus spongiosum is much thinner than that of the corpora cavernosa penis and contains many elastic and smooth muscle fibers. The trabeculae are thinner and more elastic than those present in the paired corpora. The urethra is uniform in diameter

التطورات الهستولوجية للجهاز التناسلى فى ذكور الأغنام البرقى بعد الميلاد أ- التطورات الهستولوجية للخصية والبربخ والوعاء الناقل والقضيب

ثوية أبو ستيت - محمود أحمد بيومى

مركز بحوث الصحراء - المطرية - مصر

أجريت الدراسة بمحطة بحوث مريوط التابعة لمركز بحوث الصحراء. الغرض من الدراسة معرفة تأثير العمر على التطور الهستولوجى للخصية والبربخ والوعاء الناقل والقضيب فى ذكور الأغنام البرقى بعد الميلاد. استخدم فى الدراسة عدد ٢٧ حولى برقى ذكر عمر شهر عند بدء التجربة وقد تم ذبح ٣ حوالى عند عمر ١، ٣، ٦، ٨، ١٠، ١٢، ١٤، ١٦، ١٨ شهر.

ونلخص أهم النتائج فى الآتى:

الخصية:

أظهر الفحص الهستولوجى للأحبال المنوية فى الخصية بداية تكون تجويف صغير عند عمر ٣ شهور. وعند عمر ٦ شهور زاد قطر الأنابيب المنوية وفى عمر ٨ شهور ظهرت حيوانات منوية فى تجويف أحد الحملان. وصلت الأنابيب المنوية لأقصى نشاط لها وزاد قطرها زيادة معنوية عند عمر ١٤ شهر. متوسط عدد خلايا ليدج فى كل جزيرة ٢٧ خلية عند عمر شهر ولقد زاد هذا المتوسط إلى ٣٣ خلية عند عمر ٣ شهور ثم انخفض إلى ٢١ خلية عند عمر ١٠ شهور. وقد زادت نسبة الأنابيب المنوية المحتوية على حيوانات منوية من ١٣,٣% عند ١٠ شهور إلى ٩٠,١% عند عمر ١٤ شهرا.

البربخ:

أظهر الفحص الهستولوجى لذيل البربخ خلال الـ ٦ شهور الأولى من العمر زيادة فى قطر القنوات البربخية مع تقدم الحيوانات فى العمر. وكان النسيج الطلائى المبطن للقنوات عمادى مصنف كاذب وقد وصل لأقصى سمك له (٤٤,٤ ميكرون) عند عمر ٦ شهور وقد زاد سمك جدار القنوات البربخية من ٤٧,١ ميكرون عند عمر شهر إلى ٦٨,٦ ميكرون عند عمر ٦ شهور. لوحظ زيادة واضحة فى قطر القنوات البربخية من عمر ٨ شهور إلى عمر ١٤ شهر. وقد لوحظ حدوث نقص فى قطر القنوات البربخية وكذلك ارتفاع النسيج الطلائى المبطن لها وتحوله إلى النوع العمادى البسيط عند عمر ١٦، ١٨ شهر زادت فيه القنوات البربخية المحتوية على حيوانات منوية من ٣٣,٣% عند عمر ٨ شهور إلى ١٠٠% عند عمر ١٨، ١٦، ١٤ شهر مما يدل على الوصول إلى النضج الجنسى.

الوعاء الناقل:

يتكون من ثلاث طبقات أساسية هي المخاطية والعضلية والليفية البطانة الطلائية للوعاء الناقل عبارة عن نسيج طلائي مصنف كاذب عمادى كان لعمر الحملان تأثير معنوى على كلا من أكبر وأصغر سمك للطبقة المخاطية ولقد ازداد ارتفاع النسيج الطلائي للطبقة المخاطية من ٤٢ ميكرون عند عمر ٣ شهور إلى ٧١ ميكرون عند عمر ١٢ شهر ووصلت إلى ١٢٦,٧ ميكرون عند عمر ١٤ شهر ثم حدث انخفاض ليصل إلى ٥٤,٧ ميكرون عند عمر ١٨ شهر ولم يكن للعمر تأثير معنوى على أكبر وأصغر قطر لتجويف قناة الوعاء الناقل.

القضيب:

كان لعمر الحملان تأثير معنوى على كلا من القطاع العرضى فى القضيب وأكبر وأصغر قطر للجسمان الكهفيان وكذلك أكبر وأصغر قطر للجسم الإسفنجى.