

قسم : الولادة
كلية الطب البيطرى - جامعة أسيوط
رئيس القسم : د. أحمد ممدوح عثمان

التغيرات الموسمية فى الشكل الظاهرى للحيوانات المنوية فى الجمال

أحمد عبد الرحيم ، باهى سرور ، أحمد جمعة

أشتملت هذه الدراسة على ١٨ زوج من خصيات الجمال . والتي جمعت فى الفترة بين ديسمبر وأبريل فصل التكاثر وبين يونية وسبتمبر (فصل السكون الجيسى) .

وقد أوضحت الدراسة :- أن هناك فروق معنوية فى حركة الحيوانات المنوية وكذلك نسبة الحيوية بين فصل التكاثر وفصل الصيف .

وكذلك أوضحت الدراسة أن نسبة الحيوانات المنوية الغير طبيعية فى شكلها الظاهرى تزيد بدرجة معنوية فى فصل الصيف عن فصل التكاثر . وقد وجدت تغيرات مشابهة بالنسبة لعدد الحيوانات المنوية الغير ناضجة .

بسم الله الرحمن الرحيم

الحمد لله رب العالمين

والصلاة والسلام على سيدنا محمد وآله

والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله

والصلاة والسلام على سيدنا محمد وآله

والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله

والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله

والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله
والصلاة والسلام على سيدنا محمد وآله

Dept. of Obst. Gynae. & A.I.,
Faculty of Vet. Med., Assiut University,
Head of Dept. Prof. Dr. A.M. Osman.

SEASONAL VARIATIONS OF THE EPIDIDYMAL SPERMATOZOA IN CAMELS
(*Camelus dromedarius*)
(With One Table)

By
A.A. FARRAG; B.H. SERUR and A.A. GOMAA
(Received at 21/10/1985)

SUMMARY

A total of 18 pairs of the Testes and epididymes of camels were included in this investigation. The material was collected to cover the spring and summer season. The motility, viability as well as morphology of epididymal spermatozoa were studied. The obtained results showed that during spring, there was a significant increases in percentage of sperm motility and viability. During summer season there was a significant high percentage of abnormal and unripe spermatozoa.

INTRODUCTION

Reproduction in camels received little attention in Egypt. It is well known fact that breeding efficiency of the camel is greatly affected with seasonal variations (LEESE, 1927; BODENHEIMER, 1954; YASIN and WAHID, 1957; CHARANOT, 1963; SINGH and PRAKASH, 1964 and NOVOA, 1970). However, CHARANOT (1963) reported that in camel, the rut season is only in winter and spring (from December to May) where the male camel shows an increase in the sexual activity. ARTHUR, *et al.* (1982) stated that the rut season in camels lies between November and July and after which the camel is sexually quiescent.

In camel, an increase in the development and in the number of spermatogonia and mature interstitial cells were observed during rut season, while testicular degenerative changes with diminished number of mature interstitial cells were recorded to occur in summer (ABDEL-RAOUF and OWAIDA, 1974 and ABDEL-RAOUF, *et al.* 1975). Moreover, OSMAN and EL-AZAB (1974) Observed that the reproductive capacity of the camel increased during spring.

The aim of this work was to study the motility, viability as well as the morphology of the epididymal spermatozoa in camel (*Camelus Dromedarius*) during the spring and summer seasons.

MATERIAL and METHODS

The material included in this, study consists of 18 pairs of normal testes collected from healthy and sexually mature camels varying in age between 8 and 15 years. Ten pairs were collected from December to April, while the rest were collected from June to September. The epididymes were collected as soon as possible after slaughter. Each epididymal region (Caput, corpus and cauda) and the vas deference were cut to allow the escape of its content in buffer citrate. A drop from the diluted content of each part was examined to assess the sperm motility.

A.A. FARRAG, *et al.*

Another drop from the suspension was used to make smears stained with eosine-Nigrosine and alkaline methyle violet stains to differentiate between alive and dead spermatozoa and to calculate the incidence of primary and secondary sperm abnormalities respectively.

The percentage of sperm abnormalities was calculated from the examination of 50 sperm from each of the head and body and 200 sperm from the tail and vas deference in each sample.

RESULTS

The obtained results are presented in table (1). It shows that the percentage of motile spermatozoa in tail of the epididymis was significantly higher ($P/0.01$) in the spring season than during the summer season. Motility could not be detected definitely in the head and body of the epididymis. The present study revealed that the percentage of alive sperm in the different parts of the epididymis and vas deference was significantly ($P/0.01$) higher in the spring season than during the summer. Moreover, the total sperm abnormalities in the different regions of the epididymis were significantly ($P/0.01$) higher during summer than that during spring. In the cauda epididymis and vas deference, the incidence of the proximal protoplasmic droplet was significantly ($P/0.01$) higher in summer than in spring season. This means a significantly higher number of unripe spermatozoa in tail of the epididymis in the summer season. However, the distal protoplasmic droplet was significantly ($P/0.01$) higher in the corpus and cauda epididymis during the summer than during the spring season.

DISCUSSION

The obtained results showed that, during spring season, there was significantly higher percentage of sperm motility as well as the percentage of alive spermatozoa than during the summer season. Such result could be accepted since CHARANOT, 1965; KHAN, 1971 and ABDEL-RAOUF, *et al.* 1974 concluded that, in camel the mature leydig cells and spermatogenesis increased significantly during the rut season than during the summer season. As the leydig cells are mainly responsible for testosterone production, so an improvement in the semen quality is expected to occur during the rut season (CHARANOT, 1965). SINHA and PRASED (1966) cited that reduced quality of the bull semen in summer may be due to the short day length as well as heat stress which lead to reduction in the interstitial cell stimulating hormone and consequently androgen production. EL-SHERRY, *et al.* (1977) studied the spermatogenic cycle during winter and summer in bulls and reported a decrease in the total number of germ cells and sertoli cells during summer.

The obtained results showed that there was a significant increase in the abnormal spermatozoa and the protoplasmic droplet during the summer season than during spring season. This could be explained by ABDEL-RAOUF and OWAIDA (1974) who observed that in camel, there was degenerative changes with diminished number of mature spermatozoa during the summer season. Moreover, RAO and KOTAYYA (1974); SEICIU, *et al.* (1975) and SEXENA and TRIPATHI (1982) reported that, in bulls the total sperm abnormalities was significantly lower during winter than during summer. However, MILTCEVIC (1965) and EL-DESSOUKY (1978) stated that in bulls, higher environmental temperature during summer was associated with an increase in the percentage of the abnormal spermatozoa and decrease percentage of the viable sperms.

Table (1)
 Percentages of sperm motility, live sperm and sperm abnormalities in different parts of epididymis and vas deference of camel during rut (R) and summer (S) seasons

Criteria	Season	Sperm Motility %	Live spermatozoa %	Sperm abnormalities					Protoplasmic droplets	
				Head	Middle piece	Tail	Total	Proximal	Distal	
Caput	R	0.00	75.88± 8.35***	6.00±1.87**	6.50±1.12*	7.75±1.48	20.25±3.35**	44.25±9.60	3.88±1.76*	
Epid.	S	0.00	55.83± 8.03	13.30±0.94	12.67±2.49	12.67±4.11	38.67±6.80	50.17±6.15	4.33±2.13	
Corpus	R	0.00	69.13± 9.52**	7.50±1.50**	8.25±0.23*	9.50±1.66**	25.25±2.86***	37.13±7.04	23.87±8.70**	
Epid.	S	0.00	50.33±10.49	18.87±2.87	14.33±4.03	16.67±4.64	43.67±9.81	42.33±5.19	10.00±3.06	
Cauda	R	54.38±9.16***	79.38± 4.72***	4.75±1.88***	5.75±2.17*	6.25±1.48*	16.75±2.77***	6.13±2.20***	5.63±2.23***	
Epid	S	23.33±5.53	57.52± 8.62	12.33±0.47	10.33±0.47	11.33±0.95	32.33±2.50	24.67±9.30	23.83±8.70	
Vas	R	0.00	80.75± 4.58***	5.75±0.43*	4.25±0.83*	4.50±1.50*	14.50±1.66**	3.88±1.77***	5.87±2.57	
deference	S	0.00	58.67± 6.99	8.33±0.47	8.00±0.82	9.33±0.94	25.00±2.16	18.33±4.50	12.00±8.56	

Significantly different between Rut and Summer season at
 * $P/_{0.05}$ * $P/_{0.01}$ *** $P/_{0.001}$
 $\bar{X} \pm$ St. Et.
 n = 20 in rut season
 n = 18 in summer season

REFERENCES

- Abdel Raouf, M.; Fath El Bab, M.R. and Owaida, M.M. (1975): Studies on reproduction in the camel: Morphology of the testis in relation to age and season. *J. Reprod. Fert.*, 43, 109-116.
- Abdel Raouf, M. and Owaida, M.M. (1974): Ditto, IV. Gross changes in the morphology of the testis in relation to age and season. *Assiut Vet. Med. J.*, 1, 213-223.
- Arthur, G.H.; Noakes, D.E. and Pearson, H. (1982): *Veterinary Reproduction and Obstetrics*, 5th Ed. Bailliere Tindall, a division of Cassell Ltd. London.
- Bodenheimer, F.S. (1954): *Biology of Deserts*. Ed. J.L. Cloudsly-Thompson. Institute of Biology, London, Cited by Novoa, C. (1970).
- Charanot, Y. (1963): Synchronisation of growth of the palpatal expansion and the testis during the sexual cycle in the dromedary. *Bull. Soc. Sci. nat. Phys. Maroc.*, 43, 49-54. (A.B.A. 34, 1607, 1966).
- Charanot, Y. (1965): Endocrinologie sexuelle et deshydratation chez le Dromadaire Pale. *C.R. Seanc. Soc. Biol.*, 159, 1103-1105.
- El-Dessouky, F.I. (1978): Seasonal variation in sexual behavior and semen quality of Friesian, Genubi and their F crossbreed in Iraq. ph.D. Thesis, Fac. Vet. Med., Cairo Univ.
- El-Sherry, M.I.; El-Naggat, M.A. and Nassar, S.M. (1971): Evaluation of the spermatogenic cell cycle in summer sterility of buffaloes. *Assiut Vet. Med. J.*, 4, 134-149.
- Khan, A.A. (1971): Sexual behaviour of the male camel (camel dromedarius) and some studies on semen. Thesis, Bikaner Univ. Udaipur, India. Cited by Abdel-Raouf, M. and El-Naggat M. 1975.
- Leese, A.S. (1927): *A treatise on the one Humped camel*. Haynes & Son, Stamford, Lincolnshire. Cited by Abdel-Raouf, M.; Fath El-Bab and Owaida, M.M. (1975).
- Mann, T. and Lutwak-Mann, C. (1981): *Male Reproductive Function and semen*. Pub. Springer-Verlag, Berlin, Heidelberg, New York.
- Miltcevic, D. (1965): *Veterinaria, Savaj*, 14, 31 (A.B.A. 21, 201).
- Novoa, C. (1970): Reproduction in Camelidae, A review. *J. Reprod. Ferti.*, 22, 3-20.
- Osman, A.M. and El-Azab, E.A. (1974): Gonadal and epididymal sperm reserves in camel (*Camelus Dromedarius*). *J. Reprod. Fert.*, 38, 425-430.
- Rao, K. and Kotayya, K. (1974): A note on morphological abnormalities of spermatozoa in cross-bred bulls. *Indian. J. Anim. Sci.*, 44, 581-582.
- Saxena, V.B. and Tripathi, S.S. (1982): Variation in semen quality and preservation in Jersey bulls due to seasons. *Indian. J. Anim. Res.* (Submitted). Cited by Saxena, V.B. and Tripathi, S.S. 1983, *Indian J. Anim. Sci.*, 35 (2), 193-194.
- Salem, H.M.; Osman, S.A.; Oloufa, M.M. and Ibrahim, S.T. (1973): Effect of seasonal variations on the physical characteristics of semen of Egyptian Cattle and buffaloes. *Vet. Med. J. Fac. Vet. Med.*, 21, 207-213.
- Seiciu, F.; Miasnicoy, I.; Cimpeau, C.; Steanu, M. Radu, G and Savin, A. (1975): Correlation between sperm morphology and some enzymes in bulls. *J. Revta Crescat. Anim.* 25, 40-47. (A.B.A.; 45, 3780).
- Singh, V. and Brakash, A. (1964): Mating behaviour in camel. *Indian Vet. J.*, 41, 475-477.
- Sinha, H.S. and Prasad, R.B. (1966): Seasonal variation in semen character. *Indian J. Dairy Sci.*, 19, 83-85.
- Yasin, S.A. and Wahid, A. (1957): Pakistan camels. A preliminary survey. *Agriculture Pakist.*, 8, 289-292.