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التغيرات الموسميه لنشاط المبيض في أنثى الجمل وعلاقتها ببعض مكونات مصل الدم

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تم اجراء هذا البحث على عدد (٢٦) عينه لكل من الاعضاء التناسليلا لانثى الجمل وعينات دم تم أخذها من الحيوانات المذبوحة بمجزر بني عدي بمحافظة أسيوط، وقد اشتملت هذه الدراسة على الفحص الظاهري للمبيض وذلك لتحديد النشاط المبيضي طبقا للتغيرات المصاحبة في شكل المبيض، تم تقدير حجم المبيض عن طريق الازاحة المائية ، تم تحديد وزن الرحم ، وقد تم أيضا عمل تحليل بيوكيميائي وذلك لقياس تركيز بعضعناصر مصل الدم وذلك في الفصول المختلفة من السنة .

وقد أسفرت نتائج هذا البحث عن أن النشاط المبيضي يزداد في فصل الربيع وذلك لوجود حويصلات جراف الناضجة بنسبة ٦٨,٨٪ في هذا الفصل من السنة . ويمتد النشاط المبيضي حتى بداية فصل الصيف. كما تبين وجود فروق معنوية في حجم المبيض في حالات احتوائه على حويصلات نامية أو ناضجة بمقارنة بالمبايض التى لاتحوى على مثل هذه الحويصلات . ومن ثم فقد سجلت النتائج وجود فروق معنويه في حجم المبيض أثناء فصل الربيع والصيف بمقارنة بفصل الشتاء والخريف.

كما أسفرت نتائج التحليل البيوكيميائي لمصل الدم عن وجود زيادة معنوية في كل منعنصري الكالسيوم والفوسفور أثناء فصل الربيع، زيادة مستوى البروتين الكلي في فصل الربيع وأصبحت الزيادة معنوية في فصل الصيف، انخفاض مستوى الكوليسترول في فصل الربيع وانخفاض معنوي في فصل الصيف ، زيادة مستوى الحديد زيادة معنوية في فصل الصيف.

أيضا سجلت النتائج عدم وجود فروق معنوية في مستويات كل من الماغنسيوم ، وزلال الدم والجلوبيولين والجلوكوز والدهون الكلية في مختلف الفصول.

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SEASONAL VARIATIONS OF OVARIAN ACTIVITY IN SHE CAMEL AS RELATED TO SOME SERUM PARAMETERS

(With 4 Tables)

By

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SUMMARY

The genital tracts and blood samples were collected from 26 slaughtered mature nonpregnant female camel during a year. The ovarian size (volume) was increased sigificantly ($P < 0.01$) during follicular growth and maturation with no significant difference between the right and left ovaries. The highest ovarian activity was recorded during spring and early summer. Serum biochemical studies recorded a significant increase ($P < 0.01$) in calcium and phosphorus concentrations during Spring. The total protein level increased during Sping, but this increase was significant (P 0.05) during summer. The cholesterol concentration decreased during spring, and decreased significantly ($P < 0.05$) during Summer. The iorn concentration increased significantly ($P < 0.001$) during Summer. Non significant differences were recorded in magnesium, albumin, globulin, glucose and total lipis in relation to different seasons.

INTRODUCTION

Ovarian activity in Camelidae (C.dromedarious) appears to be very variable and not fixed at different year seasons. This was investigated by several authors over the last few years (LEONARD, 1894; LESBRE, 1903; ASDELL, 1946; TAYEB, 1948; ISLAMY, 1950; NAWITO et al., 1967 and WILSON, 1984).

YASIN and WAHID (1957) recommended that the breeding saeson in camel is from December to March, also this is the rutting period of the male camel. On the neanwhile SINGH and PRAKASH (1964) found that sexual activity is from November to February and the female camel remains in heat until it conceives.

ISLAMY (1950) observed that oestrous occurs only when the weather is cold and is of two months duration, while SHALASH (1965) found that the highest ovarian activity occured from December till May. NAWITO et al. (1967) suggested that increased ovarian activity in female camel is during Winter and Spring.

Studies on other species showed that ovarian activity is greatly affected by the levels of circulating minerals, trace elements, proteins, cholesterol and glucose in the blood of animal (OSMAN et al., 1970; ROBERTS, 1971; ZINTZEN, 1972; HIDIROGLOU, 1979; LAING, 1979; ROWLANDS et al., 1980; DHOBLE and GUPTA, 1981 and SHEHATA, 1983). The relationships between certain blood elements and different year seasons were investigated by many authors (HOJOVOCA, 1966; ROWLANDS et al., 1974 and 1975).

So, the scope of this study is to throw the light on the relationship between ovarian

activity during different year seasons and biochemistry of some serum parameters in She-camel.

MATERIAL and METHODS

The materials of the present work were collected over the course of one year from Beni-Adi slaughter house in Assiut province. Blood samples and genital tracts of 26 non-pregnant mature female (4-7 years) Egyptian one humped camel (C.dromedarious) were collected.

Before slaughtering, blood samples were collected from each animal by jugular vein puncture in clean dry centrifuge tube. Serum was separated by centrifugation 3000 r.p.m. for 20 minutes and stored at -20°C till biochemical analysis was achieved. The genital tracts were taken directly after slaughter. The ovaries were removed and stripped from the surrounding structures, then examined grossly for the presence of ovarian cyclic structures. The size (volume) of the ovaries was measured by water displacement. smears were made from cervical mucus and examined microscopically for the detection of Arborization pattern. Also, the weight of the uterus was recorded.

The concentration of calcium, phosphorus, magnesium, iron, glucose, cholesterol, total lipids in mg/100 ml and total proteins, albumin and globulin in gm/100 ml were determined using test kits supplied by Biomerux (Bains/France) and after the methods of, GINDLER (1972); GOLDENBERG (1966); GINDLER (1971); PICCARDI et al. (1972); SIEST et al. (1981); RICHMOND (1973); SCHMIT (1964); Peters (1968) and Drupt (1974), respectively. Serum calcium : Phosphorous ratio (Ca : P) and Albumin : globulin (A : G) ratio were determined mathematically.

Statistical analysis of the data were performed according to the methods of SNEDECOR and COCHRAN (1974).

RESULTS

The results of ovarian volume at different phases of the reproductive cycle in she camel are presented in table (1). A significant difference (P 0.01) was recorded in the ovarian size with mature follicles and growing follicles when compared with ovaries with no follicles (static). However, the volume of the ovaries with corpus luteum was increased but non significantly in relation to the static ovaries. The size of the left ovary was larger than the right, but this increase was non significant.

Seasonal variation in ovarian volume and uterine weight are recorded in table (2). From the table, a highly significant increase (P 0.01) in ovarian volume was present during Spring and Summer when compared with ovarian volume during Winter. A significant increase (P 0.05) was also present in the ovarian volume during Summer in comparison with Autumn. The uterine weight increased non significantly during spring when compared with other seasons, also a non significant correlation was recorded between uterine weight and ovarian volume at different year seasons. Arboraization pattern was presented by 27.3% and 50% of cases only during Winter and Spring, respectively.

The highest percentage of mature follicular growth (68.8%) and growing follicles (66.7%) were recorded during Spring and Summer, respectively (table 3).

Seasonal variation in serum parameters were recorded in table (4). From the table it is clear that calcium levels were increased during Spring andSummer, while this increase was highly significant (P 0.01) during Spring in comparison with that during winter. Serum

phosphorus levels increased during spring, while a significant difference (P 0.05) was recorded between Spring and Summer. Ca : P ratio was increased and to be more wide durig spring and Summer. Also, a significant difference (P 0.05) was recorded for the ratio between both seasons.

The total protein levels were increased during Spring and Summer and this increase was significant (P 0.05) between summer and each of Winter and Autumn. The cholesterol concentration was decreased during Spring, and Summer than those in Winter and Autumn. This decrease was significant (P 0.01) between Summer and Autumn, and between summer and Winter (P 0.05). Serum iron levels were increased significantly (P 0.001) in Summer than at other seasons. No significant differences were recorded in the other parameters.

DISCUSSION

The results of the present work revelaed that the ovarian volumes were increased significantly (P 0.01) during growth and maturation of the follicles. Also, no significant differences were recorded between the right and left ovarian volumes. Similar results were obtained by TAYEB (1948) and ABDALLA (1966), they indicated that both ovaries of the dromedary were almost equal in size. NAWITO et al. (1967), ALI (1975) and NOSEIR et al. (1980) recorded non significant differences in the size and weight between the right and left ovaries.

The ovarian volume recorded a significant increase during Spring and Summer in comparison with Autumn and Winter (table 2). This increase was attributed to the highest percentage of mature follicular growth (68.8%) which was recorded during Spring (table 3). Similary, SHALASH (1965) found that the highest ovarian activity occured from December till May. However, our results are contradicted with that reported by ISLAMY (1950) and YASIN and WAHID (1957). This contradiction may be due to geographical variation in breeding season as given by WILSON (1984). The uterine weight increased non significantly during Spring when compared with other seasons. SIMILARLY, NAWITO et al. (1967) and WILSON (1984) were in agreement that uterus is usually increased in weight during follicular activity. Moreover, the non significant correlation between ovarian volume and uterine weight (table 2) may be due to age variance.

The presence of corpora leutea in non pregnant she camel were recorded in the present work (table 2). This may be attributed to infertile mating. In this respect, ABDALLA (1966) and ALI (1975) found a corpora leutea in the ovaries of non pregnant she camel.

Concerning seasonal variation in serum parameters, the present work recordded a significant difference in calcium, phosphorus, Ca : P ratio, total proteins, cholesterol and iron. This variation may be due to nutritional factors (WILSON, 1984). The recorded values for both calcium, phosphorus and Ca : P ratio are nearly similar to that recorded by MOURAD et al. (1987). However, calcium and phosphorus were increased significantly during spring which is characterised by the highest ovarian activity. SIMILARLY and AYOUB et al. (1965); OSMAN et al. (1970) and SHEHATA (1983) recommended that serum calcium decreased significantly in cattle and buffaloes with inactive ovaries. In addition, MOUSTGARD (1971); ROBERTS (1971) and LAING (1979) found that failure of oestrus in mature animals is the usual symptoms of phopsphorus deficiency. The role played by phosphorus deficiency in reproduction is to be a blocking in the function of the pitutary gland and consequently the ovaries (ZINTZEN, 1972).

The total proteins were increased during Spring, while a significant increase was recorded during Summer in relation to Autumn and Winter. Also, albumin : globulin ratio was

in the highest level during Sprins. These values were nearly similar to the mean values of total proteins which were recorded in female camle by EL-AMROUSI et al. (1984). In this respect, DHOBLE and GUPTO (1981) and FARRAG (1982) recorded a significant difference in serum proteins between cyclic and acyclic buffaloes and this was attributed to protein deficiency in the alter.

The total lipid and cholesterol concentration showed a decreasing trend during Spring and Summer, but this decrease was significant in Summer. This trend may be due to increased demand to steroid hormones according to SOMMER (1969) that cholesterol is the most important substance in steroid synthesis. Moereover, LOTTHAMER et al. (1971) and SOMMER (1975) were in agreement that fertility was better in cows with low cholesterol concentration.

Concerning serum iron concentrations, the present results recorded a significant increase during Summer. In this respect, HIDIROGLOU (1979) found no evidence of iron deficiency even in grazing sheep or cattle.

Finally it could be concluded that the highest ovarian activity occurs during Spring (April-June) and remains to early Summer (July) as represented by a higher percentage of follicular growth and maturation. Also, this ovarian activity may be due to good pasture during this period which reflect on serum calcium, phosphorus, Ca : P ratio, total proteins and cholesterol.

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Table (1) : Ovarian volume at different phases of reproductive cycle in she camel (ml).

Ovaries	Mature Follicles		growing Follicles		no follicles		Corpus Luteus		Total	
	n	M ± S.E	n	M ± S.E	n	M ± S.E	n	M ± S.E	n	M ± S.E
Right	7	5.1 ± 1.1	5	4.3 ± 0.7	4	2.9 ± 1.1	10	3.3 ± 0.7	26	3.9 ± 0.4
Left	10	5.4 ± 0.9	6	4.6 ± 0.4	6	2.4 ± 1.6	4	5.0 ± 0.7	26	4.5 ± 0.5
Total	17	5.2 ± 0.7 **	11	4.5 ± 0.4 **	10	2.6 ± 0.5	14	3.8 ± 0.5	52	4.2 ± 0.3

** Significant at P<0.01.

Table (2): Correlation between ovarian volume and uterine weight at different year seasons.

Criteria	Autumn n	Autumn M ± S.E	Winter n	Winter M ± S.E	Spring n	Spring M ± S.E	Summer n	Summer M ± S.E
Ovarian volume	8	4.3 ± 0.4	22	2.7 ± 0.4	16	5.6 ± 0.7 **	6	5.8 ± 0.4 **
Uterine W. (gm)	4	225 ± 58.6	11	191.8 ± 18.2	8	293.6 ± 47.4	3	230.0 ± 35.1
r.		0.87		-0.09		0.43		-0.97

r = Correlation Coefficient.

Table (3): Functional activities in the studied ovaries during different year seasons in she camel.

Functional activity	Autumn n	Autumn %	Winter n	Winter %	Spring n	Spring %	Summer n	Summer %
Mature follicle	--	---	5	22.7	11	68.8	1	16.7
growing follicle	2	25.0	3	13.6	2	12.5	4	66.7
No follicles	2	25.0	8	36.4	--	---	--	---
Corpus Luteum	4	50.0	6	27.3	3	18.7	1	16.7

Table (4) Seasonal variation in serum parameters in she camel.

Serum parameters	Seasons			
	Autumn	Winter	Spring	Summer
Calcium (mg/100ml)	7.2 ± 0.9	5.7 ± 0.9	9.3 ± 0.9**	7.9 ± 0.8
Phosphorus(mg/100ml)	5.9 ± 1.3	5.6 ± 0.6	6.8 ± 0.9**	4.8 ± 0.2
Ca:P ratio(mg/100ml)	1.3 ± 0.2	1.1 ± 0.2	1.5 ± 0.2	1.7 ± 0.2*
Magnesium(mg/100ml)	7.9 ± 2.7	6.1 ± 1.5	6.7 ± 1.9	6.7 ± 0.5
T. Proteins(g/100ml)	6.6 ± 0.2	6.5 ± 0.2	6.8 ± 0.6	7.2 ± 0.2*
Albumin(g/100ml)	3.3 ± 0.5	3.3 ± 0.2	3.1 ± 0.3	3.2 ± 0.2
Globulin(g/100ml)	3.3 ± 0.4	3.2 ± 0.2	3.6 ± 0.6	4.0 ± 0.4
A/G ratio(g/100ml)	1.1 ± 0.3	1.1 ± 0.9	1.2 ± 0.4	0.8 ± 0.1
Glucose(mg/100ml)	274.1 ±70.3	258.3 ±35.5	268.1 ±65.3	374.7 ±64.7
T. Lipids(mg/100ml)	184.6 ±45.5	190.2 ±23.4	132.3 ±26.1	106.7 ±34.4
Cholesterol(mg/100ml)	76.2 ± 7.2	211.5 ±68.9	94.6 ±32.4	84.5 ± 5.6*
Iron(mg/100ml)	0.08± 0.01	0.16± 0.03	0.11± 0.03	0.35± 0.04***

M ± S.E n = 26.
* Significant at P<0.05.
** Significant at P<0.01.
*** Significant at P<0.001.