Influence of Sex on certain biochemical parameters in Nomadic Camels (*Camelus dromedarius*) nearby Pune, in Maharashtra

V.R.Patodkar*, A.P. Somkuwar, Sushant Parekar and Nilesh Khade

Department of Veterinary Physiology,
Krantisinh Nana Patil College of Veterinary Science, Shirwal-412801, Satara (Maharashtra)
Maharashtra Animal and Fishery Sciences University, Nagpur
* Corresponding author email: drvrpat@yahoo.co.in

Abstract

Blood samples were collected from 16 (8 male and 8 female) apparently healthy nomadic camels from nearby Pune. Serum samples were analyzed for certain biochemicals. No significant difference was observed in Total Proteins, Albumin, Globulin, Calcium and Phosphorus between male and female camels with values of Total proteins and Globulin slightly higher in females and that of Albumin, Calcium and Phosphorus slightly higher in males. Significantly higher ($P<0.01$) levels are observed with respect to A: G ratio in male animals than females, whereas significantly higher ($P<0.01$) value of Creatinine and BUN ($P<0.05$) were observed in female animals as compared to males.

Keywords: Camel, Nomadic, Biochemical, Blood.

Introduction

Much of the research has been carried out on the blood chemistry of the camel has taken place in India, Egypt and Sudan, and to a lesser extent in Israel. Unfortunately, many of the results appear to be contradictory, the anomalies perhaps arising from different methods of analysis and the difficulties of reproducing the same conditions in exactly the same way. Some of the differences can be explained by seasonal and nutritional factors and by the effects of sex and the rut but many anomalies are unexplained (Al-Busadah K.A. (2007). Variation in the blood constituents due to sex (Barakat MZ and Abdel-Fatth M 1971. Majeed et al 1980) were reported.

During scarcity of water and feed few camel herds move from their native state, Rajasthan to Maharashtra. Study on biochemical profile of such nomadic camels could not be traceable. Furthermore, biochemical analysis of blood can often provide valuable information regarding health and sickness of animals. Only limited information on serum biochemistry of one humped camel is available (Lakhotia et al 1964, Barakat & Abdel-Fattah 1971, Al-Ani et al 1992, Rezakhani et al 1997, Osman and Al-Busadah, 2000). Transportation on foot or movement of these nomadic camels is always associated with stress. Health and production are directly affected by the adverse environment (Hafez, 1968).

Very scanty references are available regarding the influence of sex on biochemical parameters in nomadic camels, nearby Pune (M.S.). Therefore, an attempt has been made to estimate the normal values of biochemical parameters and to study the influence of sex on biochemical parameters in nomadic camels.

Materials and Methods

Blood samples were collected from 16 (8 male and 8 female) apparently healthy nomadic camels in the month of Jan 2008 from nearby Pune. About 10 ml of blood samples were collected from jugular vein of each animal in the vials without any anti coagulants for serum separation. Separated Serum samples were analyzed for Total proteins, albumin, globulin, A:G ratio, Creatinine, BUN, Calcium and Phosphorus by were analyzed spectrophotometrically (UV-Vis Spectrophotometer-117, Systronics, Mumbai) using commercial reagent kits (Span diagnostics, Surat).

Statistical Analysis

Significance of differences among the biochemical parameters in two sexes was determined by student-t test by using Web Agricultural Statistical Package of ICAR (www.icargoa.res.in/wasp/tt22.php).

Results and Discussion

Mean biochemical values (± S.E.) of adult male

Table-1. Mean biochemical parameters in adult male and female camels Indicating influence of Sex.

Biochemical parameters	Male (n = 8)	Female (n = 8)	Mean of all animals
Total Proteins(g/dl)	7.40 ± 0.350	7.57 ± 0.389	7.49 ± 0.372
Albumin(g/dl)	4.24 ± 0.195	4.01 ± 0.223	4.13 ± 0.208
Globulin(g/dl)	3.16 ± 0.204	3.56 ± 0.188	3.36 ± 0.198
AG ratio	1.34 ± 0.077**	1.12 ± 0.041**	1.25 ± 0.055
Creatinine (mg/dl)	1.87 ± 0.215**	2.37 ± 0.138**	2.13 ± 0.182
BUN (mg/dl)	16.39 ± 0.187*	21.57 ± 0.170*	18.99 ± 0.168
Calcium (mg/dl)	10.12 ± 0.289	9.20 ± 0.479	9.67 ± 0.339
Phosphorus (mg/dl)	5.68 ± 0.458	5.59 ± 0.694	5.64 ± 0.567

and female camels are presented in Table-1 indicating the influence of Sex along with Mean values of all the 16 animals. No significant difference was observed in biochemical values of Total Proteins, Albumin, Globulin, Calcium and Phosphorus between male and female camels with values of Total proteins and Globulin slightly higher in females and that of Albumin, Calcium and Phosphorus slightly higher in males. Similar results in these serum biochemicals with no significant difference in male and female camels of Majaheem, Maghateer and Awarik breeds were reported (Al-Busadah K.A.2007).

Significantly higher (P<0.01) levels are observed with respect to A:G ratio in male Animals than females, whereas significantly higher (P<0.01) value of Creatinine and BUN (P<0.05) are observed in female animals as compared to males. In contrast to this (Al-Busadah K.A.2007 and Barakat MZ and Abdel-Fatth M, 1971.) have reported non-significant difference in blood urea nitrogen and creatinine, among sexes with the values higher in female than in males.

Similar average values of serum proteins and serum albumin in this study were obtained by other workers (Soliman and shaker 1967, Ghodsian et al 1978, Abdo et al 1987 ,Mehrotra and Gupta 1989, AL-Ani et al 1992 , Nyang, ao 1997, Dalvi et al 1998 and Al-Busadah K.A. 2007) whereas, the values reported by (R. Salman and M. Afzal , 2004) for total serum proteins and albumin were slightly lower than the present study. The A/G ratio was significantly higher than those in other ruminants (Sarwar et al 1992) being more than one. This probably makes it possible to maintain the high colloid osmotic pressure needed for storing water in blood or regulating water balance (Al-Busadah K.A.2007).

The blood urea nitrogen (BUN) and creatinine, were similar to the reference values for the dromedary camels (Abdelgadir et al 1984, Eldiridiri et al 1987,Bengoumi et al 1999 and Dalvi et al 1998). The exceptionally high level BUN in camels in comparison to other livestock is of interest in view of camel's ability to utilize urinary nitrogen at times of poor grazing or water deprivation.

The mean values of serum calcium and phosphorus in this study are in agreement with those reported by Soliman and Shaker (1967), AL-Ani et al 1992, Dalvi et al 1998 and Rezakhani et al (1997).

Acknowledgement

The authors are thankful to Dr.V.H.Kalbande, Ex-Associate Dean, KNP College of Veterinary Science, Shirval (Satara, Maharashtra) for providing facilities and permission to carry out the study.

References

1. Abdelgadir, S.E., Wahbi, A.G.A and Idris, O.F.,(1984): Some blood and plasma constituents of the camel. In: W.R. Cockrill (ed.), The Camelid – An All Purpose Animal, (Scandinavian Institute of African studies, Uppsala, Sweden), 438-443.
2. Abdo MS, Hassanien MM, Manna ME and Hamed M (1987): Electrophoretic pattern of serum protein in Arabian Camel. Indian Veterinary Journal 64: 841-844.
3. Al-Ani FK, Al-Azzawi WARA, Jermukly MS and Razzag KK (1992): Studies on some haematological parameters of camel and llama in Iraq. *Bulletin of Animal Health and Production in Africa* 40: 103-106 .
4. Al-Busadah K.A. (2007): Some biochemical and haematological indices in different breeds of camels in Saudi Arabia. *Scientific Jour. of King Faisal University (Basic and Applied Sciences)* Vol.8(1):131-142.
5. Barakat MZ and Abdel-Fatth M (1971). Seasonal and sexual variations of certain constituents of normal camel blood. Zentralblatt for Veterinarmedizin A 18: 174-178.
6. Bengoumi, M., Moutaoukil, F., Farge, F.D.L and Faye,B.,(1999): Thyroidal statun of the dromedary camel (*Camelus dromederius*). Effect of some physiological fact*ors. Journal of Camel Practice and Research*. 6, 41-43.
7. Dalvi,S.H., Mantri, A.M.,Talvelkar,B.A.,Kulkarni, B.A.Patankar,D.D. and Walawalkar,M(1998): Blood metabolic profiles of Indian Camel(*Camelus Dromedarius*) under hot humid climate of Konkan region. *Indian Veterinary Journal* 75: 217-220.
8. Eldirdiri KL, Suliman HB and Shommein AM (1987):

Normal serum activities of some diagnostic enzymes in dromedary camel in Sudan. *Veterinary Research Communication*. 11: 201-203.

9. Ghodsian I, Nowrouzian I and Schels HF (1978): A study of some haematological parameters in the Iranian camel. *Tropical Animal Health and Production* 10: 109-110.
10. Hafez, E.S.E. (1968): Adaptation of domestic animals. Lea and febiger, Philadelphia.
11. Lakhotia, R.L., Bhargava, A.K. and Mehrotra, P.N. (1964): Normal ranges for some blood constituents of the Indian camel. *Vet. Re.*, 76: 121-122.
12. Majeed, M., G. Hur, Z. Rahman and A. Ahmed. (1980): Effect of sex and season on 10 haematological values of normal adult humped camels. *Rev. Elev. Med. Vet. Pays. Trop.* 33: 135-141.
13. Mehrotra V and Gupta ML (1989): Seasonal variations in certain blood constituents in camel. *Indian Journal of Animal Science* 59: 1559-1561.
14. Nyang'ao J.M.N., W. Olaho-Mukani, J.M.Maribei and J.K. Omuse (1997): A study of some haematological and biochemical parameters of the normal dromedary camel in Kenya. *Journal of Camel Practice and Research* 4: 31-33 .
15. Osman T.E.A. and Al-Busadah K.A. (2000): Effect of age and lactation as some biochemical constituents of camel blood in Saudi Arabia. *J. of Camel Practice* 7: 149-152.
16. Rezakhani, A. Habibabadi S.N., Ghojogh M.M. (1997): Studies on normal haematological and biochemical parameters of Tuurkmen camel in Iran. *Journal of Camel Practice and Research*. 4: 41-44 .
17. Salman, R. and. Afzal, M.(2004): Seasonal Variations in Hematological and Serum Biochemical Parameters in Racing Camels. *J. Camel Science.* 1: 63-65.
18. Sarwar A, Khean IR, Hur G an Khan IR (1992): Studies on the serum transferases and electrolytes of normal one humped camel in summer. *Pakistan Veterinary Journal* 12: 178-182.
19. Soliman MK and Shaker M (1967): Cytological and biochemical studies on the blood of adult she-camels. *Indian Veterinary Journal* 44: 989-995.

* * * * * * * *