

A FEW HAEMATOLOGICAL AND SEROLOGICAL PARAMETERS OF SIKA DEER, BARKING DEER AND GORAL AT A HIGH ALTITUDE ZOO

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Blood analysis is a common means of assessing nutritional, diseased and reproductive status of a free-ranging deer (Seal & Busch, 1987; Wood *et al.*, 1986). It is therefore imperative to establish reference values for blood characteristics of ungulates (DelGiudice *et al.*, 1990) so as to compare at the time of adverse health status. In the present study, efforts are made to add the data with respect to haematological and serum biochemical parameters in these animals that are habituated to high altitudes.

Nainital Zoo (29°24'N & 79°28'E) is located at an altitude of 2075m. The ungulates in the zoo were captured by physical restraint by the trained zoo staff without causing much stress to the animals. Blood samples (5ml each) were collected aseptically by jugular venipuncture using 18 gauge needles into a sterile tube containing ethylene di-amine tetra-acetic acid (EDTA) for haematological analysis, and into 10ml serum tubes for serum biochemical analysis. Haematological parameters were performed in the laboratory using standard procedures. Haemoglobin concentration was estimated by Sahli's haemometer using acid haematin method; packed cell volume (PCV) by microhaematocrit method; total erythrocyte count (TEC) by haemocytometer method and total leucocyte count (TLC) was performed by hemocytometer method Thoma's diluting fluid. The serum biochemical parameters were estimated using kits. Serum glucose was estimated by Glucosidase Peroxidase method (GOD-POD) as described by Trinder, (1969), using reagents supplied by Beacon Diagnostics Pvt. Ltd., Navasar. Total serum protein was determined by Biuret method (King & Wooton, 1959; Henry *et al.*, 1974), reagents supplied by Beacon Diagnostics Pvt. Ltd., Navasar. Albumin and globulin were estimated by Bromocresol Green (BCG dye) method (Doumas & Watson, 1971), using Crest Biosystems Reagents. Creatinine was estimated using Jaffe (modified) method as described by Schirmeister *et al.* (1964) and urea by enzymatic method using urease (Webster, 1977).

The random haematological and serum biochemical parameters estimated for the given species are detailed in the Tables 1 and

2. Haematological profile in female Sika Deer (n = 1) was found to be within normal range as reported by Kitchen (1978). In case of gorals, RBC and haemoglobin values were well within the normal range. These values were observed higher in the males (n = 2) as compared to the females (n = 2). Reiter *et al.* (1994) also observed significant sex-wise variation among gazelles with respect to PCV, Hb, MCV, and MCH, where the values were higher in males than in females. In case of barking deer, Hb, RBC, PCV values were also well within the normal range and were comparatively higher in the males (n = 2) than in the females (n = 2).

Serum biochemical profile in female Sika Deer was found to be within normal range with respect to serum total protein, albumin, globulin, creatinine and urea. In case of Barking Deer, serum glucose, total protein, globulin and creatinine were slightly higher in males compared to females. Similarly, Kovac *et al.* (1997) found no significant differences in juvenile Fallow Deer when evaluated by their gender. In case of gorals, males showed comparatively higher values of serum total protein, albumin, globulin and creatinine than the females. On the other hand, in gorals and barking deer, the urea concentration was higher than the males.

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Table 1. Haematological profile of Sika Deer, Goral and Barking Deer

Parameters	Sika Deer	Goral		Barking Deer	
	Female (n=1)	Male (n=2)	Female (n=2)	Male (n=2)	Female (n=2)
Hb (g/dl)	14.00	11.60	8.40	13.00	12.00
RBC (10 ⁶ /μl)	7.00	5.80	4.30	6.50	6.00
WBC (10 ³ /μl)	-	-	-	8.83	-
PCV (%)	42.00	-	-	39.00	36.00

Table 2. Serum profile of Sika Deer, Goral and Barking Deer

Parameters	Sika Deer	Goral		Barking Deer	
	Female (n=1)	Male (n=2)	Female (n=2)	Male (n=2)	Female (n=2)
Glucose (mg %)	-	66.26	-	94.26	65.39
Total protein (g/dl)	7.61	7.24	4.01	5.56	5.44
Albumin (g/dl)	3.32	2.91	2.24	3.03	3.55
Globulin (g/dl)	4.27	4.30	1.75	2.50	1.87
Creatinine (g/dl)	1.70	2.71	2.41	2.41	2.00
Urea (mg %)	18.12	20.30	21.40	21.07	28.23

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VET BRIEF

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A CASE OF HISTIOCYTOMA IN A LEOPARD

PANTHERA PARDUS

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web supplement

Neoplasms of skin like histiocytomas are common in canines. These benign tumors arise from the monocyte macrophage population of the skin (Henderson & Brewer, 1993). The present paper reports a case of histiocytoma in the ventral aspect of neck in a leopard.

A female leopard, aged 9 years weighing about 50kg, at Nandankanan Zoo developed a fluctuating swelling at ventral cervical region with symptoms of periodic inappetance and respiratory distress. Parenteral administration of Cefotaxime sodium 1g (Alkem Lab) and Neurobion 9ml (Merck Lab) once daily for seven days suppressed the symptoms. The condition recurred after seven months showing similar symptoms with marked increase in swelling. Repetition of initial treatment did not produce favourable results. It was decided to anaesthetize the leopard for examination and treatment. A mixture of 0.65mg of atropine sulphate, 0.25mg of xylazine hydrochloride and 75mg of ketamine hydrochloride was injected intramuscularly after restraining the animal in a squeeze cage. The leopard came to recumbent position

in nine minutes and was transported to the zoo hospital. Sonogram of the region was performed using a linear probe of 5MHz which revealed heterogenous anechoic and hypochoic areas identifying combination of solid mass with little soft tissues. It was observed that the larynx and trachea were deviated from its normal position. A bottle of DNS was infused intravenously and the animal was intubated with an endotracheal tube of 9cm ID. It was decided to enucleate the mass. A liberal skin incision was given over the mass to exteriorize it from the underlying tissues. On examination it was found that the growth was extending from hyoid bone to thoracic inlet caudally putting pressure on trachea and oesophagus. As the growth was highly vascular and in view of its proximity to vital structures around the area it was decided not to intervene further and hence the incision was closed. The animal was revived with 10mg of intravenous yohimbine hydrochloride and brought to sitting posture but within 20 minutes it developed cardiac arrest and died. Post-mortem examination did not reveal any gross lesions any where in the body. Histopathological examination of the growth showed large, closely packed cells appeared indistinctly grouped by thin fibrous tissue. Cells showed round to oval vesiculated nuclei and prominent nucleoli. Mitotic figures were not infrequent. Cytoplasm were clear, many being vacuolar indicating it to be a histiocytoma (Image 1^w).

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See Image 1^w in the web supplement at www.zoosprint.org