HYPOKALEMIA IN A CAT

Sindhu K. Rajan* and Usha Narayana Pillai

Department of Veterinary Clinical Medicine Ethics and Jurisprudence

College of Veterinary and Animal Sciences, Mannuthy, Kerala - 680651

*Corresponding author: sindhu.rajan@kvasu.ac.in

Recieved: 16-07-2019 Accepted 22-08-2019

ABSTRACT

Hypokalemia is a major electrolyte disturbance in feline medicine. A case of hypokalemia in a male kitten is described. The blood gas analysis of the case revealed primary metabolic acidosis with hypokalemia. The case was successfully treated with potassium supplements orally.

INTRODUCTION

Potassium is essential for normal functions of cardiac, nervous and muscle tissue and plays a vital role in gastro intestinal and endocrine systems. Multiple regulatory systems and mechanisms such as dietary, gastro intestinal, renal, translocation, hormonal and iatrogenic, operate concurrently to maintain normal potassium balance. The most significant neuromuscular abnormality induced by hypokalemia in dogs and cats is skeletal muscle weakness from hyperpolarized (less excitable) myocyte plasma membranes that may progress to hypopolarized membranes. Ventroflexion of the head and neck; stiff and stilted gait; and plantigrade stance are the common evident clinical symptoms in feline hypokalemia. This paper presents a case report of feline hypokalemia (Schermerhon and Hall-Fonte, 2003).

CASE HISTORY AND OBSERVATION

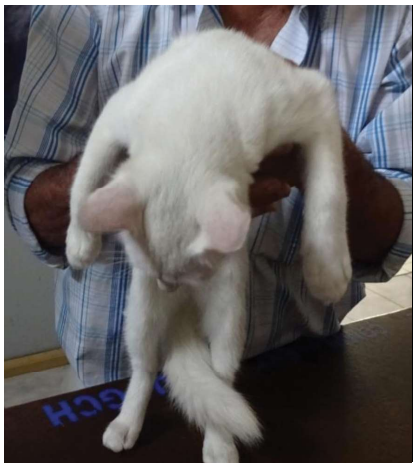

Fig.1. Ventroflexion in cat

A four month old male kitten was presented to the University Veterinary Hospital, Kokkalai with the complaint of neck shortening and stiffening of head since one day. The appetite, water intake, defecation and urination were normal. Ventroflexion of neck, stilted gait, occasional shivering and in co-ordination while walking were observed (Plate1.).

Table.1. Venous Blood Gas Analysis

Parameters	Units
pH	7.293
pCo2	23
pO2	103
cHCO3	11.1
BE	-15.4
cSO2	97.4
Na	156
K	2.8
Ca++	1.13
cTCo2	11.8
Hct	41
cHgb	13.9
Glucose	128
Lactate	6.5

Animal was alert and the physiological parameters were within the normal range. The peripheral blood smear was positive for *Haemobartonella felis* and faecal sample was positive for ova of coccidian species. Venous blood gas analysis revealed severe hypokalemia, primary metabolic acidosis and respiratory compensation (Table.I). Enhanced lactate level was also observed. The condition was diagnosed as hypokalemia secondary to hemobartonellosis and coccidiosis.

RESULTS AND DISCUSSION

The concurrent occurrence of hypokaleima, coccidoisis, haemobartonella were recorded in the present case report. The extra renal cause for hypokalemia as well as metabolic acidosis was considered since creatinine value was within normal range. The positive result of faecal sample for coccidia in the present case suggested the possibility for the gastro intestinal loss of potassium. Genovese *et al.* (1996) reported hypokalemic myopathy in a human secondary to chronic intestinal infection with giardia. Duin *et al.* (2009) reported hypokalemia in anorexic severly lethargic cat affected with Mycoplasma felis. Schermerhon and Hall-Fonte (2003) reported that metabolic acidosis and metabolic alkalosis produced hyperkalemia and hypokalemia respectively whereas metabolic acidosis by lactic acid did not produce hyperkalemia. Hence the hypokalemia along with metabolic acidosis due to elevated lacate observed in the present case could be justified. Potasssium

deficiency caused disturbance at the neuro-muscular junction due to impaired electrical conduction at the cell membrane level which then resulted into muscle weakness and ventroflexon.

Schaefer et al. (1985) reported that potassium depletion reduced plasma insulin levels which further impaired carbohydrate metabolism and subsequently increased the blood lactate levels. The lactic acidosis observed in the present case could be due to increased muscle shivering as reported by Friedrich (2001). The owner was advised about the condition and treatment was started with potassium chloride @ 6 mEq/day in divided doses orally for seven days, tablet doxycycline @ 10 mg/kg b.wt orally for 10 days and combination of sulpha-Tmp @15 mg/kg twice daily orally for seven days. Uneventful recovery was noticed by five days of treatment.

CONCLUSION

A case of hypokalemia in cat and the blood gas analysis of the same has been described.

REFERENCES

Duin, M.B., Moyaert, H., Van de Maele, I., Daminet, S. and Boyen, F. 2009. Hemotropic mycoplasmas in cats Part 2: case report Vlaams Diergeneeskundig Tijdschrif 78 : 155-159.

Friedrich, C. L. 2001. Lactic Acidosis Update for Critical Care Clinicians Journal of American Society of Nephrology 12 (1) 15-19

Genovese, A., Spadaro, G., Santoro, L., Rippa, P.G., Onorati, A.M. and marone,G. 1996. Giardiasis as a cause of hypokalemic myopathy in congenital immunodeficiency. Int.J Clin Lab Res 26: 132-135.

Schaefer, R. M., Heidland, A. and Horl W. H. 1985. Carbohydrate Metabolism in Potassium-Depleted Rats Nephron 41(1):100–109.

Schermerhon, T. and Hall-Fonte, D. 2003. Potassium disorders. Veterinary learning systems Compendium 5(6) : 1-8