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Studies of Depraved Appetite in Egyptian Cattle

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Abstract: The study was carried out on (49) cattle cases were clinically healthy animals with average body condition. They were clinically and laboratory examined proved as healthy cattle and they are free from internal and external parasites were kept as controls while other (100) cattle animals were suffering from depraved appetites. All animals were belonged to the villages scattered in the Qena Governorate Egypt. Blood samples were taken from the external jugular vein and then centrifuged and stored until analyses. Blood was taken aseptically from all the animals and transported to laboratory for biochemical analysis for estimation of macro and micro elements in diseased animals. Fecal samples was taken aseptically from all the animals and transported to laboratory for the presence of internal parasites. The results showed a highly significant effect of copper, iron, chloride and sodium significant at ($p<0.01$) and low significant of protein, zinc, phosphorus and calcium at ($p<0.05$). The aim of this work was to follow the changes, during the early diagnosis of depraved appetite on some trace elements, protein and internal parasites.

Key words: Cattle, depraved appetite, trace elements, protein, internal parasites, parasites

INTRODUCTION

Cattle has an economic importance in Egypt, they play a great role in meat, milk and leather production (Taha, 1991). Cattle in Egypt about 5000,000 in (2009) and 17.3% of the cattle population and 6% of the buffalo population are owned by people who do not own agricultural land. The 89% of the cattle population and about 75% of the buffalo population are in agricultural holdings of <2.1 ha. The 93% of the cattle population and about 86% of the buffalo population are in herds of <10 animals. According to source FAO statistics, 2011, cattle provide the consumers with meat, milk and there products for fertilizing the lands.

Livestock form an important component of the agricultural sector, representing about 24.5% of the agricultural gross domestic product with value of around EGP [Egyptian Pounds] 33.6 billion [USD 6.1 billion] in 2007 (Anonymous, 2009). Most number of cows are reared separately in Qena Governorate. Most of the farmers have a small number of cows as they are mostly poor and do not really care about health care for their cows veterinary but only when their cows become bad.

Also, the high prices of concentrates led to the peasants to offer diets provide little in quality value or leave their animals beside the canals and rivers to engulf any things. Depraved appetite is a problem facing both the farmers and the veterinarian and veterinarian try to treat the signs. Pica is defined as a depraved appetite or abnormal appetite and has been regarded as assigns of nutritional deficiency or boredom (Ralston, 1986), the condition is seen in cattle Jain pregnant and lactating buffaloes camels (Ralston, 1986) and occasionally in others animals sheep (Akgul *et al*., 2001) horse. Another definitions of Pica is a scientific term defining ingestion of nonfood items. It usually refers to pathologic condition in animals that induce compulsive material ingestion in some cases, material ingestion is simply a behavioral trend, habit or even a normal occurrence.

MATERIALS AND METHODS

Animals: The 49 cattle were clinically healthy animals with average body condition. They were clinically and laboratory examined proved as healthy cattle and they are free from internal and external parasites were kept as controls. The 100 animals were suffering from depraved. All cattle were subjected to careful clinical examination after method described by Coles (1986). The animals which were adapted to the veterinary unit by their owners. The complain was a depraved appetite, emaciation, constipations, poor growth, rough hair and eating a foreign bodies like plastics, ropes, clothes, metal, bones and breaks.

The clinical examination included: Examination of the visible mucous membranes, body temperature, respiratory rates and also percussion and auscultation of rumen.

Collection of faces: Fecal sample were collected directly from the rectum of animals in plastics bag and transported to laboratory for examination. Fecal examination carried

Table 1: Classification of animals according to age and sex

Variables	Values
Controls animals	7
Depraved animals	8
Controls animals	14
Depraved animals	40
Controls animals	14
Depraved animals	28
Controls animals	14
Depraved animals	24

Sex: Males, females, age, 6 months 1 years, 1-3, 3-5, over 5 years

out by concentration-flotation technique using saturated salt solution of sodium chloride. Samples put in a test tube and then filled with saturated solution let it in stand position for 10 min. And then uses one drop of supernatant and another from sediment on two separated slides and then examine.

Collection of blood samples: Blood samples were collected from each animal under strict hygienic conditions by veinpuncture of jugular vein after the method describe by Coles (1986). The sample were left in room temperature for 30 min and then centrifuge at 3000 rpm. The obtained sera were put into sterile, clean, dry vials and kept for biochemical analysis for at-20° in deep freeze. Blood samples were collected for the following determination.

Serum parameters
In organic:

- Macro element: calcium mg/dL and phosphourous. mg/dL
- Micro elements: copper ug/dL., iron ug/dL. and zinc. ug/dL

Organic Sodium and chloride. mol/L. Total protein g/dL (Table 1).

Postmortum examination: A huge amounts of unusual foreign bodies collected from the rumen of dead depraved appetite cattle.

Statistically analysis: The obtained data in the study statistically analyzed by a software program SPSS (Statistical Package for Social Science). All the values were expressed as Mean±Standred Devation (SD). One way ANOVA applied to compare the results of biochemical values in healthy and depraved cattle.

RESULTS AND DISCUSSION

Clinical findings: Skin and hair coat. In the depraved appetite cattle the skin was dry and a hair coats was rough.

Visible mucus membranes: Paleness of mucus membranes in the depraved appetite cattle were obviously clear in cattle infected with parasites.

Fig. 1: Cattle eating a piece of plastic bucket

Fig. 2: Illustrated cattle grazing a piece of metal

Examination of the rumen: Auscultation of the rumen showing cessation of rumination (atony), decrease contraction of rumen by 1-2 contraction 2 min and typmany.

Temperatures: Rectal temperatures ranged between 38.1-38.5°C in depraved appetites cattle, clinical sign poor coat, reduced appetite, incoordination weakness, slow growth, loss of hair, nutritional anemia, pale mucus membranes decreased weight gains, loss of weight, engulfing a foreigen materials such as ropes, plastic wire, bones, clothes, metals. Recently we reported that non metallic, soft foreign bodies as plastics could be found in a large probation of cattle (El-Maghraby and Hailat, 2001). Figure 1-8 showing these signs.

Serum parameters
In oraganic:

- Macro element: calcium mg/dL and phosphourous. mg/dL
- Micro elements: copper ug/dL., iron ug/dL and zinc. ug/dL

Fig. 3: Cattle eating a piece of metal

Fig. 4: Cattle eating template brick

Fig. 5: Female cattle eating plastic bag

Oraganic:- sodium, chloride. mol/L. Total protein g/dL

Microscopical examination: In this study, revealed that the presence of different types of internal parasites suh as ascris, fasciola, strongylus and hook worms can cause blood loss, anemia, pica.

Fig. 6: Emaciated female cattle

Fig. 7: Removal a foreign by surgery

Fig. 8: Different shape of foreign bodies from male bull

Clinical examination: In this study the depraved appetite constitute a problem facing the owners and the veterinarians. Its effects appear on decreasing the productivity of the animals meat or milk and slow growth and poor bone, poor reproductive performance, reduced appetite, incoordination weakness, loss of hair, Nutritional

Table 2: Biochemical parameters of control and depraved animals

Variables	Control animals	Depraved animals	Control animals	Depraved animals	Control animals	Depraved animals	Control animals	Depraved Animals
No.	7	8	14	40	14	28	14	24
Calcium (mg/dL)	10.75±0.1	9.5±0.2	10.3±0.3	9.6±0.4	10.6±0.1	8.4±0.2*	10.2±0.1	9.2±0.3
Phosphorus (mg/dL)	3.4±0.3	2.5±0.1*	3.2±0.1	2.6±0.1*	3.1±0.2	2.3±0.1*	3.1±0.1	2.1±0.1**
Copper (ug/dL)	139.1±7.7	75.9±8.2**	133.1±7.7	80.9±7.2**	135.3±7.7	85.9±5.2	131.4±7.7	88.9±6.2**
Iron (ug/dL)	100.8±0.8	80.5±3.9**	105.8±0.8	79.5±3.9**	102.8±0.8	78.5±3.9**	106.8±0.8	77.5±3.9**
Zinc (ug/dL)	87.2±1.41	77.2±1.41*	85.2±1.41	76.2±1.11*	87.2±1.41	75.2±1.41*	87.2±1.41	78.2±2.41*
Chloride (mmol/L)	140.2±7.7	75.9±8.2**	133.2±7.7	80.9±8.2**	135.2±7.7	73.9±8.2**	132.2±7.7	78.9±8.2**
Sodium (mmol/L)	133.5±0.3	89.9±3.7**	130.5±0.3	98.9±3.7**	129.5±0.3	85.9±3.7**	128.5±0.3	80.9±3.7**
Protein (gm/dL)	7.1±1.2	5.5±0.2*	6.1±1.2	5.1±0.2*	6.8±1.2	5.1±0.2*	7.2±1.2	6.2±0.2

Males, females; age, 6 months 1, 1-3, 3-5, over 5 years: mean±sd standered deviation; * = the mean differences is significant at <0.05; ** the mean difference is significant at p<0. 01

anemia, pale mucus membranes, decreased weight gains, emaciation subsequently on the incomes of the owners further than the cost of treatments and in other hands the poor emaciated animals or the deaths. The reported clinical signs were previously mentioned by Hussein (2005) (Table 2).

Auscultation of the rumen in abnormal appetite showed cessation of rumination, atony and decrease contractions of rumen by 1-2 contraction 2 min and typmany. This finding was similar to the observations of (Rao, 1987). Hypomotility of rumen may be caused by either a reduction in the excitatory drive to the gastric centers or an increase in inhibitory inputs (Leek, 1969). The temperatures of depraved appetites animals were within normal (Radostits *et al*. 2000).

Biochemicl analysis: Serum calcium in depraved appetites cattle presents a low significance decreases in males also in females helminth infected and in pregnant. There is no difference between male and female results (Outten and O'Halloran, 2001). The animals with depravd appetite in this study showing reduce appetite these agree with (McDowel, 1996). Deficient of calcim in animals cause reduced appetite, loss of gain and low production (Radostitis *et al*., 2000). The calcium deficiency may be due to inadequate supply of feeding or mal nutrition or due to age of animal (Doornebal *et al*., 1988). The effect of emaciated parasitic animal may lead to decrease of serum calcium in depraved appetite cattle (Van Hourt and Sykes, 1996, Akgul *et al*., 2001).

Also, the results of serum phosphorus in depraved appetites cattle presents a low significance decrease than controls. There is no significant decrease in serum phosphorus between male and female cattle (Outten and O'Halloran, 2001). In depraved appetite animal infected by helminthes the results revealed significant decrease in phosphorus values than animals without parasitic infestation when compare with controls (Van Hourt and Sykes, 1996). Also the values are similar in pregnant depraved animals than non pregnant and controls. The tendency to lower P levels in early and late pregnancy compared to the corresponding period in nonmated cows might result from the passing of P through the placenta and to the negative effect of PTH which increases urinary P elimination (Cheng *et al*., 1993; Wallach, 2000). The significant decrease of phosphorus may due to nutritional deficiency.

Zinc serum in depraved male animals are low than control and in female of low significance and parasitic and pregnancy cattle the values of low significance. This result is in a partial agreement with that of (Erdogan *et al*., 2004) for cattle and (Yokus and Cakir, 2006). During late pregnancy, the Zn concentrations were somewhat decreased but the difference was not significant. A few reports give the variations of serum Cu during gestation and lactation (Vanaken *et al*., 1991).

Serum copper in depraved animals is of high significance decrease in male and in female depraved cattle compared with controls. Our results on seasonal variations of Cu are in agreement with some literature reports (Cimtay and Olcucu, 2000) but not with others (Erdogan *et al*., 2004). Also, the significant correlation between physiological changes and serum Cu was observed is consistent with some reports (Cimtay and Olcucu, 2004) but not others (Vargas *et al*., 1980).

The results values of iron serum in depraved cattle revealed a high significance decrease in depraved animals, especially in pregnant and infested by parasites. An iron deficiency was also suspected in pica in various animal species, firstly by Bassett *et al*. (1995). The deficiency was due to GI nematodes lead to iron deficiency anemia which in turn produce growth retardation, stunting and/or poor cognitive development in animal (Berger, 2006). Diagnostic guidelines were given to explain that deficiency is important to distinguish anemia caused by dietary iron deprivation and that associated with infection or malnutrition (Green *et al*., 1993).

The serum values of chloride and sodium in depraved animals revealed a high significance decrease in depraved appetite animals than controls which agree with

Abdullahi *et al.* (1984) who found that causes of allotrophagia is hyponatremia. Cattle may lick various objects such as rocks, wood, soil and the sweat of other animals. Sometimes no other visible symptoms occur for months, then appetite begins to decline, the animal subsequently develops an unthrifty appearance with a rough hair coat. This is followed by a rapid loss of body weight and a reduction in milk yield. Eventually, a sudden death will follow a prolonged salt deficiency (Berger *et al.*, 2006), total protein level is higher in cows than calves and it is significant. This result agree with the Roussel *et al.* (1982) and Doornenbal *et al.* (1988). In shorthorn cattle Doornenbal *et al.* (1988) found except for the values at birth, total protein levels were lower in young animals and higher in mature cattle Russell *et al.* (1982), also found that in Jersey cows total protein increased with age over a range of one to 6 years. In dairy cattle total protein levels were reported to be higher in dry cows (Peterson and Waldern, 1981).

Microscopical examination: The examination of depraved appetite cattle show (70) seventy casses+ve for internal parasites. Heifer infested with ascariasis showed macrocytic hypochromic anemia changed cell parameter, total protein, calcium, inorganic phosphorus. Zinc, copper (Shalaby *et al.*, 2011) endoparasite cause significance economic losses and health problems in domestic animals.

In general GI nematodes reduce nutrient availability to the host through both reductions involuntary feed intake and/or reductions in the efficiency of absorbed nutrients although the underlying mechanisms of the depression in appetite have not been fully elucidated.

CONCLUSION

Depraved appetite cattle constitutes a problem that facing the farmers and veterinarian and this affect animal health and economic value of the animals. In this study raveled decrease in hematological parameter and serum biochemical parameter of calcium phosphorus, copper, iron, zinc, sodium, chloride, total protein.

RECOMMENDATIONS

The follow up of clinical examination of deprave appetite cattle are very important between the owners and the veterinarians. Repeated parasitic examination of animals .the helminthes parasites are of high important factors that affects the productivity of animal and then affect the hematology and biochemical parameters. Estimation of macro and trace elements help in the treatments of depraved appetite animals. Supply the animals by its requirements from trace elements and balanced ration. Proper housing and managements. Coaching veterinary importance in educating farmers to provide their animals at the beginning of any problem relating to animal health. The return of the insurance system forced the animals from which Walt was giving the owner of the animal concentrates with free intensive veterinary care. Provide courses for farmers through agricultural associations in the best ways to feed the animals and methods of managements.

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