

EXOCRINE PANCREATIC INSUFFICIENCY - A CASE REPORT

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History

A one and a half years old male German Shepherd Dog was presented with symptoms of extreme cachexia. Owner reported that the animal was passing large quantities of undigested food. Ingested rice particles appeared as such in the excreta. Animal defecates immediately after food intake. The condition started 3 months back. The body weight of animal reduced drastically. Urination was normal. Referral veterinarian has treated the animal with antibiotics (ciprofloxacin), steroids, dewormers and digestive tonics.

Observations

Animal was very weak and emaciated. Hair coat was very rough and dry. There was occasional missing of pulse. Respiration rate was 30/minute and pulse rate was 77/minute. Body temperature was 103.2°F and mucous membrane was pale roseate. Animal defecated a large quantity of undigested food. Feces were yellow in colour and animal defecated 6 to 7 times a day. Dog exhibited ravenous appetite and polyphagia.

Laboratory Test

Iodine Test – Faces was found to be positive for starch. Gelatine digestion test – No digestion of Gelatine was observed. Microscopic examination of feces revealed no endoparasitic ova, but lots of fat globules were observed. Differential leukocyte count revealed, Neutrophils – 48%, Leukocytes -50%, Monocytes -2%. Wet film was positive for microfilaria. Result of glucose tolerance test is given below.

Table 1. Result of glucose tolerance test

Glucose Tolerance Test Time (Minutes)	Blood Glucose Concentration (mg %)
0	72.5
30	131
60	121.5
90	.92
120	71.5
150	70

Diagnosis

The disease was diagnosed as Exocrine Pancreatic Insufficiency (EPI). Animal exhibited typical symptoms of EPI. Glucose Tolerance Test revealed proper endocrine function of pancreas. Blood glucose level remained within the normal range.

Treatment

Animal was treated with antibiotics, Ivermectin, pancreatic enzyme supplements and amino acid and vitamin tablets for one week. There was improvement in the condition of the animal. Animal was provided with fat and fiber free diet. Enteric coated enzyme tabs were given along with food. (PANKREOFLAT, [Solvay Pharma], 2 coated tabs along with food). Treatment continued for 2 weeks. Animal improved much in physical condition. Rancid smell of faeces decreased. Hair coat condition improved.

Sequela

The dog was having a ravenous appetite. During one feeding animal accidentally chocked a large quantity of food and died immediately. Post mortem examination revealed lesions of malnutrition. The pancreas was small in size, (5cm in length, 4mm in breadth and 2mm thick). Histopathology examination of pancreas revealed pancreatic acinar atrophy and lymphocyte infiltration (Plate 1).

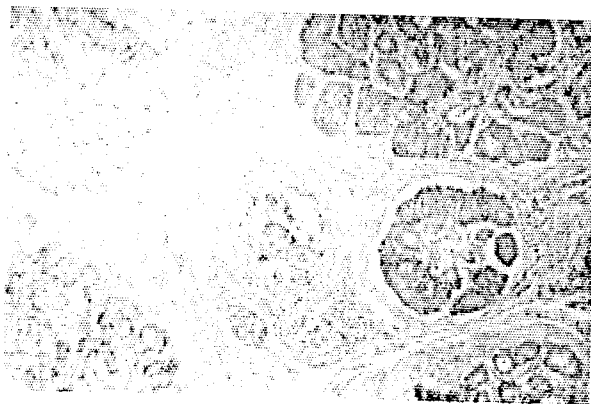


Plate.1. Exocrine pancreatic insufficiency (EPI) in a dog as a consequence of a severe reduction of pancreatic mass caused by pancreatic acinar atrophy.

Discussion

The predominant clinical signs of EPI, diarrhoea, weight loss and a ravenous appetite as exhibited here can be directly attributed to decreased intra-duodenal concentrations of pancreatic enzymes, bicarbonate, and various other factors with resultant malassimilation of fats, carbohydrates and proteins. Indigestion of carbohydrates and protein is revealed by iodine test and gelatine digestion test. German shepherd dogs are genetically predisposed to exocrine pancreatic insufficiency. In these cases disease develops before two years of age as evidenced in this particular case. Auto immunity is suggested to be the reason for pancreatic acinar atrophy. Endocrine function of the pancreas was normal since blood glucose level was maintained within normal range.

Pancreatic acini synthesize and secrete enzymes such as lipase, trypsin and amylase that digest fats, proteins and carbohydrates. Pancreatic duct cells secrete bicarbonate that maintains an optimal pH for digestive and absorptive processes, and intrinsic factor that enables the absorption of cobalamin (Vitamin B12). The exocrine pancreas also produces bacteriostatic peptides and defensins that regulate the upper GI flora, and has a role in maintenance of the intestinal mucosa and glucose homeostasis.

A non-enteric enzyme preparation was given at mealtimes. Only enzyme preparations coated to resist the gastric acid were administered. The alternative is feeding fresh pancreas. The enzyme supplement was mixed into the food. Pre-feeding incubation of food with pancreatic enzymes for prolonged period did not significantly improve the digestion or absorption. Cessation of diarrhoea and weight gain observed over a two week period. Animal was maintained on this regimen and an attempt was made to decrease the enzyme supplement to the lowest effective dose.

In theory a highly digestible, fat restricted diet (fat is considered the most difficult nutrient to

assimilate and lipase activity is the limiting step in its digestion) that is low in fibre (fiber is indigestible, lowers energy density and hinders pancreatic enzyme activity) would seem justified in dogs with EPI.

References

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Animal Nutrition