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Chocolate Poisoning In A Dog

Review Article

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Abstract

Three years old female pug was presented to the clinics with sudden onset of muscle tremors, salivation, vomitions, panting, restlessness and polyuria from last night. Dog had history of ingestion of dark coloured chocolates. Examination of saliva and faecal samples revealed brown colour with chocolate odour. Based on the history, clinical signs and laboratory examination condition was diagnosed as acute chocolate poisoning. Dog was treated with inj. DNS, inj. ranitidine along with antibiotic and activated charcoal for about three days. After completion of three days of therapy dog was free from toxicity.

Key Words: Chocolate Poisoning; Pug; Treatment

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Introduction

Chocolate poisoning is one of the toxicological emergencies in dogs. Chocolate is derived from the roasted seeds of the plant *Theorem cacao*. The seeds contain substances known as methylxanthines, which includes the CNS stimulants theobromine (3, 7-dimethylxanthine) and caffeine (1, 3, 7-trimethylxanthine), both of which are toxic to dogs. Although both constituents may contribute to clinical signs of chocolate toxicity, the former is the major cause as its concentration in chocolate is 3-10 times higher than that of caffeine and its half life significantly longer [1]. Chocolate toxicity is not dependent on the amount of chocolate ingested but it is depend on the type of ingested chocolate [2]. Different concentrations of methylxanthines are present in different products and range from low levels as in white chocolate to cocoa beans which contain the highest levels[3]. The LD50 of caffeine and theobromine for dogs is 100–500 mg/kg [4]. At a low dose of 20–40 mg/kg mild signs may appear (restlessness, vomiting), from a dose of 40–50 mg/kg cardio-toxic effects can be observed such as rhythm disturbances, seizures might be evident from a dose of about 60 mg/kg, while higher doses than that may be lethal [5]. The present article describes the theobromine toxicity in a dog due to consumption of chocolate.

Case History and Observations

Three years old female pug was presented to Veterinary Hospital, Proddatur with muscle tremors, salivation, vomition, increased thirst, panting, restlessness, frequent urination from last night. Dog was regularly dewormed, vaccinated and regularly feeding with adult pedigree feed. There was no change in the feeding habits, but 12-14 hours back owners offered first time, imported dark chocolates to the dog. Clinical examination of the dog revealed rise in body temperature (103.7°F), increased heart rate (142/min), increased respiration (36/min), dehydration, muscle tremors, congested congenctival mucus membranes, with normal lymph nodes. Coffee coloured with chocolate odour vomitous, saliva and faeces was observed. Faecal samples, peripheral blood smear, serum and whole blood with EDTA were collected for laboratory examinations. Examination of peripheral blood smear and feacal samples did not reveal any abnormalities. Haemotology revealed total leucocytes count (9200/cumm), neutrophils (6256/cumm), lymphocytes (2760/cumm), eosinophils (184/cumm), haemoglobin (13 g/dl), TEC (6.2 x 10^6/cumm), PCV (43%). Examination of the faecal samples for presence of parvo viral antigen with ScanVet kit (Intas) revealed negative results.

Treatment and Discussion

Based on the feeding history, prophylactic measures, clinical signs, laboratory examination the condition was diagnosed as acute chocolate poisoning. Dog was treated with Inj. DNS (@ 20 ml/kg b.wt, IV), Inj. Amoxicillin and cloxacillin (@ 25 mg/kg b.wt, IM,

BID), Inj. ranitidine (@ 0.5mg/kg b.wt, IM) and activated charcoal (@ 1gm/kg b.wt orally) on the day of presentation. Advice was given to continue the administration of activated charcoal at every 4 hours interval up to the next day to reduce the continued resorption and recirculation of theobromine. By the next day dog was free from the salivation and excitement. Above therapy was continued up to three days, after completion of therapy dog was free from toxic signs of chocolate poisoning.

Most poisonings from methylxanthines occur as a result of chocolate ingestion. Chocolate is toxic to animals, serious poisoning happens more frequently in domestic animals especially to dogs, which metabolise theobromine much more slowly than humans. Though a toxic dose will vary depending on factors like size of the dog (highly toxic in smaller breeds), sensitivity of the dogs to chocolate, ingestion of chocolate with empty stomach and after food and the type of chocolate (dark chocolate is more toxic than milk chocolate). The most important toxic component of chocolate – the methylxanthines alkaloid theobromine is present in variable concentrations dependent on the quality of the chocolate – the darker or richer in cocoa solids the more dangerous the preparation. Cocoa powder and cooking chocolate are the most toxic forms. Theobromine and caffeine are readily absorbed from the GI tract and are widely distributed throughout the body. They are metabolized in the liver and undergo enterohepatic recycling and then excreted in the urine as both metabolites and unchanged parent compounds. The half-lives of theobromine and caffeine in dogs are 17.5 h and 4.5 h, respectively. Methylxanthines increase intracellular calcium levels by increasing cellular calcium entry and inhibiting intracellular sequestration of calcium by the sarcoplasmic reticulum of striated muscles. The net effect is increased strength and contractility of skeletal and cardiac muscle[1]. Theobromine action is through competitive inhibition of cellular adenosine receptors, leading to vasoconstriction, dieresis, tachycardia and CNS stimulation[6]. Hooser and Beasley [7] observed chocolate toxicity in dogs with clinical signs of restlessness, hyperacidity, mild hyperesthesia, emesis, diarrhea, stiffness, muscle twitching, tonic to tetanic convulsion, polypnea, tachycardia, hyperthermia which observed similar findings in the present case. Osweiler [8] reported that treatment of chocolate toxicity included detoxification via gastric emptying, activated charcoal, osmotic cathartic, fluid therapy and lidocaine. But, present case was treated with activated charcoal, fluid therapy along with supportive therapy. In dogs, the half life of theobromine is 17.2 hours, but in severe cases, clinical symptoms of theobromine poisoning can persist for 72 hours [3]. The dog was presented to the clinics immediately after noticing of toxic signs, which accompanied timely therapy. So, early response was noticed within 24 hours. Though intoxication can also occur in cats and other species [9], dogs are mainly affected because of their appetite for sweet foods, and smaller dogs appear to be more susceptible to intoxication than larger dogs [10]. If the ingested chocolate is highly fatty, gastrointestinal signs of intoxication include vomiting, diarrhoea, abdominal distention, and pancreatitis [2,9]. Increased diuresis and haematuria are reported and can progress to more detrimental cardio-respiratory and neurological signs such as tachycardia, rhythm disturbances, seizures, cyanosis and tachypnoea [2,4,9]. Death is caused mainly due to arrhythmias, hyperthermia, respiratory failure, congestion and oedema[11].

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