



Chocolate Intoxication in a Budgerigar*

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Summary: Chocolate cause clinical symptoms in birds as other animals and is well known food toxin for animals. Toxic components of chocolate are theobromine and caffeine that are within methylxanthines. In this case report; male, four months old budgerigar with abnormal behaviour, hyperactivity, tremors, ataxia, loss of appetite, vomiting, diarrhoea referred to our clinic. According to anamnesis the budgerigar had no health problem up to last 12 hours. But, since last 12 hours, the budgerigar had eaten cakes containing chocolate about the size of hazelnut and at the same time it had also eaten 15-20 sugar about the size of rice which covered with cacao, according to the owner. After that, the budgerigar ate cake containing chocolate about the size of hazelnut and also 15-20 sugar covered with cacao. After this complaints mentioned above started. In the clinical examination of the budgerigar; body temperature was 41.8°C, respiration rate was 65/minutes. In the Electrocardiography findings, pulsation was 235 beat/minutes, and ventricular arrhythmias was found. In treatment; activated carbon tablet (3 mg/kg) were applied to the bird in every 12 hours. Owner informed that the bird got to normal health 24 hours after the treatment. As a result; with this case report chocolate intoxication and treatment were mentioned in budgerigar.

Key words: Budgerigar, chocolate toxication, cocoa, theobromine poisoning

Bir Muhabbet Kuşunda Çikolata Toksikasyonu

Özet: Çikolata Theobroma kakaonun kavrulmuş tohumlarından elde edilen ve diğer hayvanlarda olduğu gibi kuşlarda da klinik semptomlara neden olduğu iyi bilinen bir gıda toksinidir. Çikolatanın toksik bileşenleri metilksantinlerden olan teobromin ve kafeindir. Bu vaka anormal davranış, hiperaktivite, titreme, denge bozukluğu, iştahsızlık, kusma, ishal şikâyeti kliniğimize getirilen dört aylık erkek bir muhabbet kuşunda değerlendirildi. Alınan anamnezde; son 12 saate kadar herhangi bir sağlık probleminin olmadığı öğrenildi. Fakat, muhabbet kuşunun son 12 saatte fındık büyüklüğünde çikolata içeren kekleri yediği ve aynı zamanda, pirinç büyüklüğünde çikolata ile kaplı yaklaşık 15-20 adet şekeri de yediği hasta sahibi tarafından ifade edildi. Bunu takiben şikayetlerin ortaya çıktığı bilgisi alındı. Muhabbet kuşuna yapılan genel klinik muayenede; vücut ısısının 41.8°C, solunum frekansının 65/dk, olduğu tespit edildi. Elektrokardiyografi bulgularında nabız frekansının 235 atım/dakika ve ventriküler taşikardi olduğu belirlendi. Tedavide kuşa 1-3 mg/kg dozunda aktif kömür 12 saat ara ile uygulandı. Tedaviden 24 saat sonra muhabbet kuşunun normale döndüğü öğrenildi. Muhabbet kuşlarında çikolata toksikasyonunu ve sağaltımı bu vaka raporu ile belirlendi.

Anahtar kelimeler: Çikolata, çikolata toksikasyonu, kakao, muhabbet kuşu, teobromin zehirlenmesi

Introduction

The main reason for chocolate toxication is theobromine (3.7 methylxantines) and caffeine (1. 3. 7-trimethylxantines) ingredients (3,9,10). Although theobromine concentration in chocolate is three to 10 times higher than cafein, both of them contribute to clinical symptoms seen in chocolate toxication (1,3,17). Theobromine and caffeine absorbed easily from gastrointestinal (GI) canal and spread to whole body. Theobromine and caffeine metabolised in liver

and it is subjected to enterohepatic recycling (1,3). Theobromine and caffeine inhibit competitive cellular adenosine receptors. As a result, central nervous system (CNC) stimulation, diuresis, and tachycardia may occur. Methylxantines increase uptake of cellular Ca⁺⁺ and in striated muscles inhibits intracellular Ca⁺⁺ excretion, thus, cause increasein intracellular Ca⁺⁺ level. The effects are; increased skeletal and cardiac muscle contraction (1,3,8,9,10).

Clinical signs of chocolate toxication are vomiting, diarrhoea, restlessness, hyperactivity, polyuria, ataxia, rigidity, tremors, and seizures. Tachycardia, premature ventricular contractions, tachypnea, cyanosis, hypertension, hyperthermia, bradycardia, hypotension, or coma may occur (1,3,8,9). Death mainly oc-

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cur as a result of heart rhythm disorders, hyperthermia or insufficient respiration (8). The diagnosis of chocolate toxication mainly based on clinical findings and anamnesis of chocolate exposure. There is no specific antidote for chocolate intoxication. The aim of treatment in chocolate toxicity is to maintain basic life support, reduce the absorption, increase the removal of alkaloids, symptomatic relief of seizures, regulate the respiratory difficulties and correct cardiac dysfunction (3).

Case Report

In this case report; male, four months old budgerigar with abnormal behaviour, hyperactivity, tremors, ataxia, loss of appetite, vomiting, diarrhoea referred to our clinic. According to anamnesis the budgerigar had no health problem up to last 12 hours. But, since last 12 hours, the budgerigar had eaten cakes containing chocolate about the size of hazelnut and at the same time it had also eaten 15-20 sugar about the size of rice which covered with cacao, according to the owner. After this feeding complains mentioned above started according to anamnesis. In the clinical examination of the budgerigar; body temperature was 41.8°C, respiration rate was 65. In electrocardiography (ECG), pulsation was 235 beat/minutes, and ventricular arrhythmias was found. The ECG (Cerewell ECG 110336 Vet, China) was applied at 25 mm/s. Due to the clinical findings and anamnesis; diagnosis considered as chocolate toxication. activated carbon tablet (3 mg/kg) were applied to the bird in every 12 hours for treatment. Furthermore, diphenhydramine HCL (2.2 mg/L) was also suggested to the animal owner for sedation. We were informed by animal owner that the bird got to normal health 24 hours after treatment. As a result; with this case report chocolate intoxication and treatment were mentioned in budgerigar (Table 1 and Figure 1).

Result and Discussion

Table 1. ECG findings of II derivation in budgerigar having chocolate intoxication and in healthy budgerigar

Parameters	Chocolate intoxication	Healthy
P amp	0.1 mv	0.2
P ms	0.15	0.12
PR int	0.035	0.06
QRS int	0.045	0.07
ST interval	0.038	0.03
QT interval	0.08	0.065
T amp.	0.15	0.2
Frekans	235	195

Chocolate cause clinical symptoms in mammals and birds and it is one of the well known food toxin (4,13). Toxic components of chocolate are theobromine and caffeine which are both methylxantines (3,8). Domestic animals may exposed to chocolate or cocoa products such as candies, cakes, cookies,



Figure 1. Anxious appearance of the budgerigar

baking ingredients (such as particles of chocolate, cocoa powder), and cocoa bean mulches (5). Likewise, in this case report, a budgerigar ate a cake containing chocolate and also sugar covered with chocolate, thus, had intoxication symptoms. Studies about toxic effects of methylxantines in birds could not be cited. But, this kind of components known to antagonize adenosine receptors in mammals (3,13,15,18). Although adenosine receptors present in whole body, methylxantines mostly effect receptors present in the nervous system and cardiovascular tissue. In cardiovascular system, antagonising effects of these receptors were end up with tachycardia, hypertension and ventricular arrhythmia in the ECG (3,8,9,18).

Normal ECG values in many birds still have not been determined. In addition, ECG traces in birds should

be taken at 100-200 mm/s (14). Furthermore, during ECG examination of birds, restraining and positioning of them cause severe stress (6). In this case presentation, pulsation determined to be 235 beat/minute at ECG and ventricular arrhythmia were also observed. To understand if this ventricular arrhythmia due to

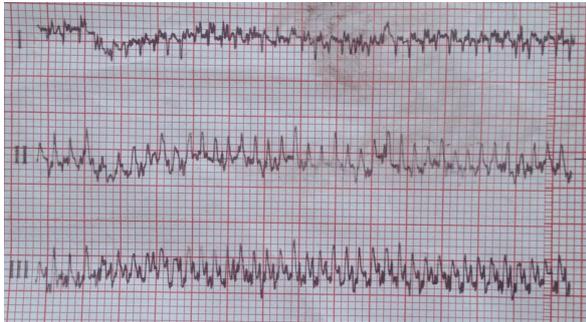


Figure 2. ECG findings in budgerigar having chocolate intoxication

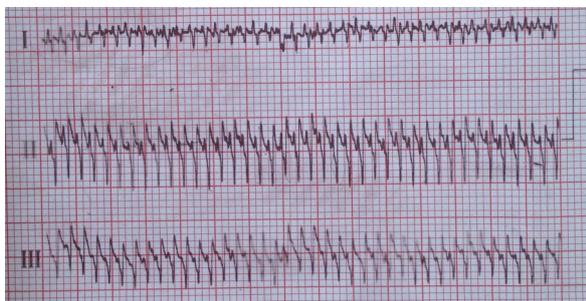


Figure 3. ECG findings healthy budgerigar

stress or not, a healthy budgerigar at the similar age and same breed was examined, pulsation found 195 beat/minute and had a normal sinus rhythm. According to these results ventricular tachycardia in the budgerigar may develop due to chocolate poisoning. On the other hand, in this present case report, ECG were taken at 25 mm/s due to our ECG readers' insufficiency (Figure 2 and Figure 3). Reading ECG traces were very difficult. So, ECG in birds suggested to be taken at 100-200 mm/s as reported in the literature (14).

In central nervous system, adenosine receptors have locomotors antidepressant, anxiolytic, and sedative effects. Inhibition of adenosine receptors by Methylxanthines cause stimulation of the central nervous system, hyperactivity and anxiety (3,7,11,13,15). Seizures and hyperalgesia can also be seen (13). Sera et al. (17) reported a chocolate toxication in a mynah bird which had abnormal behaviours like aggression, changing habits, excitement, hyperesthesia, seizures or syncope findings. Similar symptoms were also observed in our case report.

As a result of kidney adenosine receptor inhibition, kidney functions reduce and polyuria draw attention (3,11,13,18). In the present case report, observed more liquid dropping believed to the result of polyuria.

Other clinical symptoms of chocolate intoxication are platelet aggregation, anorexia, dullness, vomiting (regurgitation in birds), muscle tremors, hyperthermia, increased respiratory rate, cyanosis, coma, and

death (3,8,13,17,18). Similarly in this case report, anorexia, dullness, and regurgitation were observed

In animals, clinical symptoms can develop in a few minutes or a few hours and after in a while eating chocolate can be lethal (7). In the present case, clinical symptoms started four-five hours after chocolate intake according to anamnesis and these symptoms continued until their application to our clinic 12 hour after food intake.

Fluid diuresis can help stabilizing cardiovascular function and accelerating urinary excretion of methylxanthines (1). Due to the abnormal behaviour, hyperactivity, tremors, ataxia iv fluid infusion was not performed. For this reason oral fluid application was used.

In the treatment, methocarbamol or diazepam (0.5 mg/kg intravenous) can be use for tremor, mild seizures, and in severe seizures; barbiturates and diphenhydramine HCl 2.2 mg/L of drinking water for the control of tremors (1,2,10,17). In the present case report, diphenhydramine HCl were suggested.

In the treatment, removal of GI content has also been suggested (6,12,16). Especially in birds, the high possibility of aspiration of regurgitation, following 1-3 g/kg activated carbon tablet application lavage of proventriculus has been suggested (1,6,8,12,16). But, in this case, because the bird applied to our clinic 12 hours after chocolate intake, lavage was not implemented. But, to reduce absorption 1-3 g/kg activated carbon tablet administered and because of the enterohepatic recirculation of methylxanthines, repeated doses should be administered every 12 hour in symptomatic animals for as long as signs are present (1). Twenty four hours after treatment the bird became well, this treatment believed to have an impact in this outcome as reported in the literature.

As a result, in the light of these information's the present case report is the first report on chocolate intoxication in budgerigar. Treatment strategies were also discussed and believed to be helpful to the practitioners that facing such problems. Further studies in terms of this subject also suggested to enlighten the issue.

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