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BUFO REGULARIS - A POTENTIAL RISK TO EXOTIC DOGS IN GHANA: A CASE STUDY

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Abstract

Two German Shepherd dogs (GSD), reared in a kennel in Accra, Ghana, died after ingesting toads. Two laboratory investigations were conducted to determine the cause of death: (1) an autopsy was performed at the Animal Research Institute and (2) toad specimen were sent to the Zoology Department, University of Ghana, for identification. The toads were identified as the common toad, *Bufo regularis*. A concerted investigation concluded that death occurred due to the effects of *Bufo* toxin a highly toxic compound.

Introduction

Over an 11-year period, the Animal Research Institute (ARI), Accra, received five reports on death of German Shepherd dogs occurring due to toad ingestion. Despite the paucity of scientific investigations in Ghana, circumstantial evidence suggests that such deaths do occur.

Attention was drawn to this case study when two pure-bred GSD females were seen dying after ingesting toads at an Accra suburb. Wager (1965) and Smyth (1962) reported that the common toad when angry or injured exudes Bufo toxin. Bufo toxin is described as a highly-toxic compound (The New Encyclopaedia Brittanica, 1994) and the *Bufo regularis* exudes seven toxins (Iseli *et al.*, 1964; Schroter, Taman & Reichtein, 1958).

Reports on dog mortalities due to toad toxins have been made in Australia (Mac Donald, 1990), Denmark (Groes, 1991) and India (Srinivas *et al.*, 1996). This report draws attention to the fact that dog mortalities induced by Bufo toxin do occur in Ghana.

Experimental

Case report

Carcasses of two GSD females aged 4 and 5 months were presented to the ARI for postmortem examination. The carcasses had been brought in from a kennel that rears exotic dogs for breeding purposes. The dogs had been introduced into this kennel, which is located in a suburb of Accra, at 6 weeks of age. They were housed together with two Dobermann females and mongrels (one female, one male and two castrated males).

Within the premises, the exotic dogs were kept overnight and most of the day in an enclosure measuring 10 m × 15 m. They were released three times daily for about 30 min on each occasion. They were fed four times on a protein (meat, fish) and carbohydrate (rice, gari, corn meal, etc.) diet, supplemented with multivitamins and trace minerals each day. Fresh water was made available to them at all times within their enclosure.

Just before the dogs died, the dog attendants saw the dogs foaming at the mouth, shaking their heads vigorously and pawing at their mouths. They had difficulty in breathing, started convulsing and died before any veterinary intervention. The attendants further commented on two observations: (1) foaming and pawing at the mouth and vigorous shaking of the head had been observed in the Dobermann before the introduction of the GSD in the premises. This was observed whenever they were released from the enclosure. This act was not understood until the animals was observed snatching a toad in its mouth and quickly letting go off it. The above signs subsequently followed. But the act of snatching toads permanently ceased after sometime. (2) that the mongrels had never been seen attempting to snatch the toads.

Laboratory examination

Six toads (three males and three females) were gathered from the kennel and sent to the Zoology Department, University of Ghana, Legon. The toads were identified by comparison with voucher specimens from accounts given by Schiøtz (1969) and Hughes (1988).

Postmortem examination was carried out on both carcasses, each weighing 10 kg and 12 kg.

Results and discussion

The postmortem revealed similar lesions in both carcasses: hyperaemic buccal membranes, toad remnants in the stomach, contraction of the heart ventricles with dilated auricles full of blood. The lungs were hyperaemic and lightly infiltrated with fluids. Toad specimens were sent to the Zoology Department, University of Ghana, Legon after toad remnants were discovered in the carcasses' stomachs.

The toad specimens were identified as *Bufo regularis* which exudes seven toxins (Iseli *et al.*, 1964; Schroter, Tamm & Reichtein, 1958) all over its skin (Wager, 1965) and parotid glands (The World Book Encyclopaedia, 1994; Low, 1972). Skin was evident in the toad remnants in the stomach of the carcasses. Smyth (1962) describes the thick toxic mucus, produced by the granular glands of the skin, as extremely poisonous when swallowed.

The New Encyclopaedia Brittanica (1994) indicates that bufogin and bufotalin (Leftwich, 1983) components of *Bufo* toxin, have an effect on the heart like that of *digitalis*. An overdose of *digitalis* causes arrhythmias (The Merck, 1986) culminating in strong venticular contraction (Jones, 1962) and cardiac arrest (Leftwich, 1983). Death can be directly attributed to myocardial exhaustion. Heart failure was accompanied by asphyxation as there was widespread venous congestion and infiltration of fluids in the lungs.

The symptoms described by the dog attendants and findings in the carcasses match descriptions given by several workers (Wager, 1965; Leftwich, 1983; Mitchell, *et al.*, 1988) on the effects of the common toad toxins on dogs. This culminated in the death of the dogs (Mitchell *et al.*, 1988).

The authors, in conclusion, would like to point out that *Bufo regularis* is a potential risk to exotic dogs, especially the GSD in Ghana. Several reports on mortality in this breed were made to the ARI. The authors found the observations made by the dog attendants, on the Dobermann and Mongrel noteworthy, as they believe that this will open a new avenue for scientific analysis of breed behaviour towards the common toad in Ghana.

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