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Case Report

DISPELLING MYTH AND INSTILLING CONFIDENCE: TALE OF HOUSE LIZARD CAUSING POISONING

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ABSTRACT

Lizards are probably the most easily spotted of all reptiles. There are over 3500 different types of lizards, existing in all climates throughout the world. In many countries, the wall lizard or gecko is a welcome house guest, chasing and eating many irksome insects. They walk the walls and ceilings and live their lives unharmed by peacefully understanding their niche. They are often misunderstood and large numbers of poisoning cases are blamed on this innocent creature for lack of knowledge and exposure. The wall lizard found in most homes in India is not poisonous at all. They do not have any venomous apparatus and just helps in checking insect population. Only two species of lizards are poisonous i.e. Gila monster (*heloderma suspectum*) and Mexican beaded Lizards (*heloderma hornidum*). They are found in large numbers in Mexico and near the Gila River in south-west of United States. None of these varieties are found in India and South Africa. Here we highlight spate of incidences where chance detection of lizard in food was held responsible for rendering food poisonous. One such case presented to our hospital with episodes of nausea, vomiting, retching and recovered without any complication.

Key Words: *Lizard, Gecko, House Gecko, Hemidactylus, Lizard Poisoning, Lizard Myth*

INTRODUCTION

Lizards are versatile and as diverse as their dwellings. They have been around for a very long time with their ancestors having roamed the planet earth long before man. Lizards belong to Order Squamata; Class Reptilia; Phylum Chordata of Kingdom Animalia (Uetz, 2010). Worldwide only two lizards of family Helodermatidae are known to be capable of delivering a venomous bite that may be serious to humans; *Heloderma suspectum* and *Heloderma horridum* (Beaman *et al.,* 2006). They are found in North America, specifically in south-west part of United States and Mexico. Additionally, recent studies mention a venom system at work in two additional lizard lineages hitherto unreported: Monitor Lizards and Iguania (Fry *et al.,* 2006).

Many countries utilize the lizard in ceremonies; use their skin for leather; their tails in recipe for love potions and also use them live in fertility rites and serpent festivals. Lizards of Iguanas genera are reared as pets and at times killed for their flesh and eggs (Coles, 2002). The house gecko (*Hemidactylus*) belongs to the second most species-rich lizard family in the world, Gekkonidae, of suborder "Gekkota" (Uetz, 2010). Since prehistoric times, numerous myths have been associated with geckos. In many parts of the world lizards are considered to be venomous animals, capable of inflicting poisonous bites, causing diseases such as leprosy, vitiligo and rendering food poisonous (Sety and Hansen, 2008). Ancient Egyptians believed geckos to be hazardous to human health (Sety and Hansen, 2008), whereas in South Africa *Chondrodactylus anguilife*r and *Pachydactylus maculatus* are believed to be venomous. In Madagascar, geckos of the genus *Uroplatus* are regarded with such dread that buildings where they are found have occasionally been burned. In Mexico, *Coleonyx* species are believed to have a poisonous skin. In Malaysia, Dyak natives believe that a bite from *Crytodactylus* spp. is poisonous, and in Pakistan, *Eublepharis macularius* is believed to be even more poisonous than the cobra (Evans, 2002).

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The genus "*Hemidactylus"* commonly known as house geckos, due to their readiness to acclimatize to and coexist with humans, was originally established by Lorenz Oken in 1817. It comprises about 100 described species and is one of the most widely distributed genera of geckos with newfound species being added every few years (Carranza and Arnold, 2006; McMahan and Zug, 2007; Javed *et al.*, 2010; Sindaco and Jeremčenko, 2008).

Hemidactylus is also the most species-rich Indian gekkonid genus with at least 25 described species (Giri and Bauer, 2008)**.** Though dominant across the Indian subcontinent, *Hemidactylus* geckos remain poorly known, with various myths and disbeliefs associated with them. If lizard drops down in food it makes it poisonous, is perhaps the most common myth prevalent across all sections of Indian society. To augment this myth there have been several sporadic incidents of people falling ill after consuming food having lizard found in it (TNN, 2011; ANI, 2006; TNN, 2011; TNN, 2009). Across all the states of India, lizards have occasionally been found in food served at schools, hostels, and restaurants, and subsequently persons who consumed that food got admitted in hospital with complaints of nausea, vomiting and retching**.** People believe that breath, urine and faecal pellets of common house gecko are poisonous, while some others attribute their skin as the culprit.

In the current article we report a case in district Aligarh of Uttar Pradesh, India where two university students got admitted in the medical college hospital after taking food with lizard found in it from a local restaurant.

CASES

Two male patients aged 25 and 26 years presented with history of nausea and vomiting after ingestion of food (cooked pulse curry) from a road-side local restaurant. They had 4-5 episodes of vomiting in succession before presenting to the emergency department of Jawaharlal Nehru Medical College, Aligarh. As per the history given by patients they had food half hour before the episode when they saw lizard's tail at the base of the bowl. By that time they had already consumed half of food. They described the lizard's tail to be swollen curry smeared, but flesh intact. Immediately they felt nauseated without any premonition and subsequently had 4-5 episodes of vomiting right there before hastening to hospital. There was no history of loose stools, heart burn, and pain in abdomen, diaphoresis, fever and altered sensorium. On general examination, vitals were stable and no signs of dehydration were present. Systemic examination was within normal limit. On investigation, complete blood cell picture was: Hb: 11gm%, TLC: 5,600/cmm (N 54%, L41%, M4%, E1%), platelet count: 4.7 lac/cmm and RFT was normal. Urine examination was normal. They were put on IV fluids, IV antacids and anti-emetic. There was no episode of vomiting during hospital stay. After overnight stay in emergency department they were discharged next day without any complication and were directed to report back in case of worsening condition. They did not turn up.

DISCUSSION

Despite having long history of co-existence with human beings, people all across the globe harbour numerous misbelieves towards lizards. Some cultures feared lizards and created superstitions while few other cultures revere the lizard and have positive beliefs (Berrin and Larco, 1997).

Common house gecko or wall lizard is believed to inflict venomous and life threatening bite but generally they have small teeth, weak jaws without any venomous apparatus. They are not capable of causing severe human injury as bites just cause teeth marks, minor scrapes or at worst, some puncture marks without any other symptoms (Das, 2011). Furthermore, significant envenomation by members of the Helodermatidae family (venomous lizards) is also considered to be rare (Cantrell, 2003).

The common belief that house lizard or gecko by its presence in food by any means render it poisonous is negated by the fact that it does not produce any venom or toxin. In verity among extant reptiles only two lineages are known to have evolved venom delivery systems, the advanced snakes and helodermatid lizards (Gila Monster and Beaded Lizard) (Fry *et al.*, 2006).

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The venom of lizards of family Helodermatidae is neurotoxic in nature. Bites if occur manifest locally as excruciating pain, oedema, numbness, tingling at site of bite and systemically as changes in level of consciousness, blurring of vision, dyspnoea, dysphonia and profound weakness (Cantrell, 2003). Fortunately, Gila monsters are docile and rarely bite, and deaths from their venom are even rarer (Lizard, 2012).

The clinical symptoms of nausea, vomiting and retching can be a part of normal behaviour developed after visualizing the lizard in the food. Similar equivalent or milder symptoms can be observed if one visualizes a cockroach or termite or housefly in the food. These examples can serve as analogues. Basically it's not the lizard which is the culprit but one's belief that its presence in food has made it contaminated and poisonous is what dictates the origin of symptoms.

Alternatively, symptoms can also be attributed to food poisoning due to human pathogens present as normal flora on lizard. Several authors have demonstrated the presence of *Salmonella* as normal intestinal commensal in reptiles (Minette, 1984; Zwart, 1970). Further, occurrence of salmonellae in reptiles kept as pets or farmed for the supply to pet market has been repeatedly documented in the US (CDC, 1992a; CDC, 1992b; CDC, 2003) and in Europe (Geue and Loschner, 2002).

In many parts of the world lizards are locally important source food (Klemens and Thorbjarnarson, 1995) and the demand has given rise to many breeding and farming entrepreneurship in more than 30 countries (NRC, 1991)**.** In this aspect the infection of reptiles with pathogens, which are potentially infective for humans has raised alarm for food-borne diseases (Hutton and Webb, 2003) and many authors have reported presence of human pathogens like *salmonella*, *trichinella* (Khamboonruang, 1991; Pozio, 1997a; Pozio, 1997b) infectious arbovirus (Oya *et al.,* 1983; Doi *et al.,* 1983) and fungal diseases (Cheatwood, 2000) in lizards. A study done in Assam, India, revealed the presence of Gram-positive *Staphylococcus* strains of bacteria in oral cavity of two species of house gecko, *Hemidactylus frenatus* and *Hemidactylus aquilonius* (Das *et al.,* 2011)**.**

If the human pathogens are present in enough concentration to cause food poisoning then the symptoms could be because of normal presentation of food poisoning. Yet again in the present case the pathogens were not specific for lizards and correspondingly similar symptoms may occur if these pathogens are present in house-flies or other common house hold insects.

Further studies are needed as limited published information is available regarding toxic nature or presence of pathogen in urine or faecal pellets of lizards. Though c*ryptosporidium parvum* and *cryptosporidium muris* (both human pathogens) have been reported in the faeces of some carnivorous lizards (Xiao *et al.,* 2004).

Conclusion

House lizards are often misunderstood and mistreated creatures due to lack of knowledge. They have been blamed since time immemorial for being venomous or poisonous. They do not produce any venom or toxin and rarely ever bite. They live their lives unharmed by preying on irksome insects and in a way help human dwellings. The clinical symptoms manifested after consuming food with lizard having accidentally fallen in to it could be a part of normal behavioural response to an abhorrent creature or could be because of human pathogens present as normal flora in lizard.

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Dr Arshad Anjum met sudden death on 25th May 2013. We all miss his absence. The authors feel that the only befitting obituary would be to acknowledge his contribution in research and preparation of this paper. He was the corresponding author.

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