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HONEY BEE ATTACKS ON A POULTRY BREEDING FARM LOCATED IN GIWA LOCAL GOVERNMENT AREA OF KADUNA STATE

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ABSTRACT

The frequency of bee attacks on poultry farms have been on the increase in the past decade. Sixteen (eight month old) broiler cocks were attacked by a swarm of honey bees (*Apis mellifera scutellata*) around 10.00 am. One of the cocks died while the remaining fifteen cocks were in severe distress with swollen cyanotic comb and wattles with multiple stings on them (≥ 20 / bird). Similar occurrence occurred on the poultry farm the following year with heavy mortalities in forty (40) broilers. In both incidences, birds were treated with hydrocortisone (5 mg/kg, im), Keproceryl[®] (1gm/1L of water x 5/7) and vitamin E + selenium supplement (1gm/30L of water x 5/7) in drinking water. Mortality rates of bee stings in poultry are due to number of stings inflicted on the birds and this could be seen in the two cases reported. Most of the birds in the first and second incidences had bee stings above 20. However, early medical intervention seemed to play a role in the survival rate of the birds in which case those birds that were stung in the morning 93,6% survival rate compared to the those that were stung the evening (11.1%) of the previous day. Causes of bee attack could be attributed to the changing ecosystem due to man's activities. This report was presented to educate the veterinarian and the poultry farmer on the emerging threat to livestock in the form of bee attacks and the need to put preventive machineries in place to forestall their repeated occurrences.

Keywords: Bee sting, poultry, mortality rate, occurrence

INTRODUCTION

Bee stings are the most frequently encountered among insect related emergencies (Yurtseven and Guvenc, 2015). About 75% of the world animal species are arthropods and few of which have appreciable interactions with humans and are capable of causing significant medical problems (Dongol *et al.*, 2014). The majority of insects causing sting reactions belongs to the order Hymenoptera and the species under this order which are medically important are the honey bees (*Apis mellifera*) (Sethi and Jena, 2015). Honey bees attacks are common ant the Africanized honey bees originated by cross breeding of the European and African honey bees (*Apis mellifera scutellata*) (Fonteque *et al.*, 2017). The most important allergin in honey bee venom is Phopholipase A₂ and the toxicity of the bee venom across diverse tissues causes an acute inflammatory response (Betten *et al.*, 2006). Venomous animals constitute significant health problems in many parts of the world particularly Africa, Southeast Asia and Tropical America. In these regions epidemiological studies on venomous animals are generally restricted to envenomation by snakes and scorpions with little information on envenomation by other animals. (Linard *et al.*, 2014). Accidents caused by insects of the order Hymenoptera occurs frequently with humans and dogs. There are limited reports with scientific literatures involving horses and to a lesser extent poultry. The occurrence of honey bee attacks on poultry farms in recent years especially at the tail end of this decade (2010 -2020) in Giwa Local Government Area of Kaduna

State, Nigeria is on the increase. However, honey bee attack on poultry farm in this study location has not been documented which necessitated this report.

CASE REPORTS

Sixteen 8months old broiler cocks were attacked by a swarm of honey bees (*Apis mellifera scutellata*) in October, 2019 around 10.00 am at a poultry farm located in Giwa local government area of Kaduna state. Within 2 hours of the same day one of the cocks died while the remaining fifteen cocks were in severe distress with swollen cyanotic combs and wattles with multiple stings on them (an average of above twenty stings; ≥ 20) on each bird), labored breathing, depression and difficult movement. The birds were treated with hydrocortisone (5mg/kg, im), Keprocery[®]1 (1gm/1L of water x5/7) and vitamin E + selenium supplement (1gm/30L of water x5/7) in drinking water. All the treated birds recovered within 24 hours with the disappearance of the cyanotic combs and fed normally.

The following year October, 2020, a similar bee attack was reported on the same poultry farm with heavy mortalities. The incidence occurred at about 5:00pm the previous day and affected 45 birds. Forty broilers comprising of 10 cocks and 30 hens aged 8months were found dead in their pens with five birds alive but in very severe conditions. Clinical signs observed included swollen cyanotic comb and wattles with multiple stings on them comprising an average of above 100 stings (≥ 100) per bird. There was labored breathing, depression and difficult movement. Four birds, comprising of two live and two dead, were taken to the Veterinary Teaching Hospital, Ahmadu Bello University Zaria for examination. Similar treatment administered to the first case was given to the five live birds. All the affected birds died after treatment.

Bee stings have been under reported in poultry as most reports have to do with respect to humans, dogs or other mammals. The occurrence of bee sting in poultry is quite rare. This might be due to presence of feathers as most stings are in the unfeathered parts of the body such as the wattles and comb.

Case fatality rate of bee sting in poultry depends on number of stings deposited on the birds as was seen in the two cases reported (Table 1). However, fatality has been recorded with one sting and this is dependent on the sensitivity of the host to bee venom within 1-2 hours. The estimated mean lethal dose (LD_{50}) for most mammals is about 20 stings/kg due to venom toxicity (Lewis and Racklyeft, 2014). Most of the birds in the first and second incidences had bee stings above 20. However, early medical intervention seemed to also play a role in the survival rate of the birds in which case birds that were stung in the morning had 93.6% survival rate compared to the those that were stung in the evening (11.1%), the previous day (Table 1). This confirms the report by Rahman *et al.* (2015) where birds with 15stings/kg survived due to medical treatments administered.

Table 1: Data on birds in a poultry farm attacked by Honey Bees

Time of attack	Month/year of attack	Frequency of occurrence	Number of pens attacked	Number of birds attacked	Number of Stings	Mortality rate (%)	Survival rate (%)
Morning (6-11am)	October, 2019	1	1	16	≥ 20	6.3	93.6
Night (4-10pm)	October, 2020	1	2	45	≥ 100	88.9	11.1

FACTORS RESPONSIBLE FOR BEE ATTACK

The changing eco system due to man's activities such as deforestation and bee farming has brought bees closer to humans and the implication is that more cases of bee attacks would be recorded. The incidence of bee stings regardless of the species involved varies from country to country and depends

on diverse factors such as climate, ecological parameters, biodiversity, distribution of species, human population density, economic activities and types of dwellings (Linard, *et al.*, 2014). Honey bees do not sting unless provoked; their sting can be life threatening on humans and other animals (Mughal *et al.*, 2014). In the cases reported, the bees were provoked by the sound of a tractor as it was slashing the grass around the poultry premises.

Honey bees have lived with man since time immemorial and man's relationship with the bee is said to be more of a symbiotic relationship. However, beneficial as this might be, honey bees still pose a danger both to humans and animals. It is notable that these insects (bees) begin their seasonal migration from unidentified origins/locations during the peak of crop harvest towards poultry farms with economic trees used as hedges and boundaries like the mango, gmelina (*Gmelina arborea*) and neem trees. These trees are supposed to serve as sources of shades, temperature regulators especially in the hot seasons and wind breakers on the farm however they become the new habitat for bees. This seasonal migration is hypothetically assumed to commence after their beneficial activities of cross pollinations during the farming season and the unset of harvest. These honey bees starts migrating from arable farm settlements to destinations where they find habitable.

Hypothetically, it is assumed that apart from the trees providing a habitat for the bees during their seasonal migration, man's activities like increased honey bee farming, deforestation and possibly climate changes contribute to their fast migration towards human habitats. Apiary a micro-agricultural farming system is gradually increasing as it is a means of diversifying and exploring other agriculture means in providing food to man and reducing the level of poverty among Nigerians. This validates the report of Mujuni *et al.*, (2012) in Uganda where a governmental bee agricultural programme is encouraged. Even though modern Apiary practices require the use of standard bee boxes to limit bee sting exposure, traditional practice of foraging for wild hives persist (Rahman *et al.*, 2015).

CONCLUSION

The frequency of bee attacks on poultry has been on the increase in the past decade and most cases are not reported. These attacks at times come with economic loss of livestock and health threats to humans. This report was documented to educate the veterinarian and the poultry farmer on the emerging threat to livestock in the form of bee attacks and the need to put machineries in place to forestall their occurrences to the barest minimum.

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