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SEROLOGICAL EVIDENCE OF INFECTIOUS BURSAL DISEASE VIRUS INFECTION IN WILD RATS

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Abstract

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A total of 23 wild rats (*Rattus rattus*) were caught dead by traps set in 4 different poultry farms with history of outbreak of infectious bursal disease (IBD). The internal organs were suspended in phosphate buffered saline (PBS) and assayed for IBD precipitins and antigens by agar gel diffusion precipitation test (AGDT). Six samples were positive for precipitins. These observations indicate that IBD virus multiples in wild rats and these rats may play some role in the spread of the disease among poultry farms.

Epizootiology, screening, rodents.

Infectious bursal disease (IBD) of chickens was first described in United States of America by Cosgrove (1962). Onunkwo (1975) confirmed the existence of the disease in Nigeria. Further studies by Nawathe et al. (1978), Onunkwo (1978), Okoye and Uzoukwu (1982) showed that IBD is not only endemic but also causes an unusually high mortality in Nigeria. But the epizootology of the disease is not well understood. It has been observed that once IBD enters a farm, it reoccurs in subsequent flocks (Cessi and Gualandi 1977; Samberg and Meroz 1977; Thornton 1977; Okoye and Uzoukwu 1982). This reoccurrence could be due to the persistence of IBD virus in infected farms (Vindevogel et al. 1976) due to the physical and chemical properties of the virus (Petek et al. 1973).

The disease primarily affects the domestic fowl (Okoye 1984) but the experimental form has been described in mice by Rinaldi et al. (1970), Cammarata et al. (1979) and Bestetto et al. (1980). Not much is known about the ability of IBD virus to infect wild rats (*Rattus rattus*) which commonly inhabit poultry houses and can act as disease carriers. Some of these rats live in the bush and go into the farms in the night to eat the feeds kept in the feeders and in the stores. Often chicks are eaten by these rats.

Material and Methods

Over a period of 3 months, 23 wild rats were caught dead with traps set in 4 different farms with history of outbreaks of IBD in chickens. Each rat was eviscerated and the lungs, liver, kidney, heart and spleen were collectively weighed and homogenized with equivalent volume/weight of phosphate buffered saline (PBS). The homogenates were assayed for IBD virus precipitins and antigens in agar gel diffusion precipitation test (AGDT) using the agar and method described by Okoye and Uzoukwu (1981). For detection of precipitins, the positive control was known IBD antiserum and negative control was normal serum. In antigen detection, the positive control was a suspension of infected bursa while the negative control was normal bursal suspension.

Results

Precipitation lines were obtained between the rat tissue suspension and known IBD virus antigen within 36 hours in 6 samples. Other samples were negative for both IBD viral antigen and precipitin. But the positive controls had positive results and the negative controls were negative.

Discussion

The observations indicate that wild rats are susceptible to IBD virus infection. The possibility of the infection producing clinical signs and pathological lesions as in suckling mice (C a m m a r a t a et al. 1979) is outside the scope of this paper.

The detection of IBD viral precipitins in tissue suspensions has been reported in chickens by I d e (1975), U l b r i c h and Z u r e c k (1977) and O k o y e (1983). This method was used in this study because it was not possible to catch the rats alive. The method can also be useful in screening other wild mammalian and avian species for IBD virus infection. It is however possible that tissue suspensions may give lower number of positive results than serum samples.

E d g a r and C h o (1976) mentioned that there was no convincing evidence that the presence of rodents was related to the spread of IBD. But the results of this investigation show that IBS virus can multiply in wild rats in sufficient quantities to induce the production of detectable precipitins. It is therefore possible that the rats can discharge the virus in their excrements like faeces and this may lead to spread of IBD among poultry farms. E d g a r and C h o (1976) reported that the major means of spread of IBD virus to new areas was by movement of left-over finisher ration (diet) from hoppers on an IBD-farm to a susceptible flock on clean premises. This practice is not common in Nigerian poultry husbandry but IBD has spread to all the 19 states of the country since it was first confirmed.

Serologický průkaz infekce virem infekční bursitidy u krysy obecné

V okolí 4 drůbežářských farem s výskytem infekční bursitidy (IB) bylo do pastí odchyceno 23 krys (*Rattus rattus*). Z jejich orgánů byla připravena suspenze ve fyziologickém roztoku s fosfátovým pufrem. Ve vzorcích byly stanoveny precipitační protilátky a antigeny proti IB pomocí difusní precipitace na agarovém gelu. Precipitační protilátky byly nalezeny v šesti vzorcích. Tyto nálezy ukazují, že virus infekční bursitidy se pomnožuje i v organismu krys, které mohou hrát roli v šíření tohoto onemocnění mezi drůbežářskými farmami.

Серологическое доказательство инфекции вирусом инфекционного бурсита у крысы

В окрестностях 4 птицеводческих ферм с наличием инфекционного бурсита (ИВ) поймали довушкой 23 крыс (*Rattus rattus*). Из их органов подготовили суспензию в физиологическом растворе с фосфатным буферным раствором. В образцах определяли преципитационные антитела и антигены против ИВ с помощью диффузионной преципитации на агаровом геле. Преципитационные антитела были обнаружены в шести образцах. Приведенные данные свидетельствуют о том, что инфекционный бурсит развиваетця также в организме крыс, которые могут играть роль в распространении данного заболевания на птицеводческих фермах.

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