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RESEARCH ARTICLE

An Outbreak Investigation on Menace of Flies Resembling Mosquito (Culicoid and Chironomidae) in Chengalpattu, Tamil Nadu, India

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Abstract

Vector borne disease contribute major disease burden in India and about 65% of geographical area is endemic for vector borne disease. The identification of vector is a key component for control and surveillance of disease. Based on a newspaper report about increase in the menace of mosquito in and around Chengalpattu area, an outbreak investigation was carried out by the CLTRI team. Probable breeding areas of the mosquitoes were identified and the vector and larva samples were collected and send to VCRC, Puducherry (ICMR) for identification of the species. The report from VCRC suggests that it was Culicoid and Chironomidae species. These Species are mosquito like non-biting midges and non-pathogenic to human being, but it is able to produce disease in cattle and avian population.

Keywords: Culicoid, Chironomidae, outbreak investigation, Chengalpattu, mosquito, non-biting midges.

Introduction

In Tropical country like India, Vector born diseases contribute major burden among communicable diseases. Nearly 65% of geographical area is endemic for vector born disease. A large amount of Disability Adjusted Life Year (DALY) is lost due to morbidity caused by the vector born disease. Awareness has to be developed among the general population about the problem of vector breeding and menace. According to WHO data on the global burden of disease and the distribution of diseases among countries, communicable diseases contribute slightly more to DALYs lost in the south-east Asia region (42%) than in the world as a whole (40%) (Gupta and Guin, 2005). Hence, the report that identifying certain increase in vector density is a key for control for vector borne diseases. There are many species of mosquito vector existing in India which are responsible for transmitting diseases like Malaria, Filaria, Dengue, Chikungunya and Japanese Encephalitis. Simultaneously many vectors which look like mosquitoes were also found in India. It has importance because it mainly affects the veterinary and avian population which indirectly affects the human beings. Central Leprosy Teaching and Research Institute, Chengalpattu (TN), India is an Apex Training and Research Institute, Ministry of Health and Family Welfare (MOHFW), Govt. of India working for the National Leprosy Eradication Programme (NLEP). It has the Division of Epidemiology which is dealing with some of the disease surveillance and outbreak investigation activities. According to the Newspaper reports, during the last week of Dec 2013 and first week of Jan 2014 there was a sudden increase in the Mosquito like flies in and around Chengalpattu Town of Kancheepuram District, TN, India. This information was brought to the notice of CLTRI by PRI members and the present investigation was attempted.

Materials and methods

After the receipt of information from above mentioned sources, the Director, CLTRI, constituted a Team lead by Assistant Director (Epidemiology) who has experience in outbreak investigation and supported by Field Staff for collecting vector samples and gathering the data. Primarily, details of geographical information like water sources, drainage system, open spaces and slum areas in and around the Chengalpattu town were collected. Chengalpattu is South Western suburb of Chennai city and it is a Taluk Headquarter in Kanchipuram District, TN, India. According to 2011 census, Chengalpattu's population is 62,579. Chengalpattu is divided in to 32 municipal wards. After the detailed study of the geographical information, two places from Chengalpattu town and two places in Periurban locality in the Chengalpattu town were randomly selected. The data were collected by interviewing the local public, inspecting the breeding places, collecting the vector from selected places, and sending of larvae for identification. The team noticed that there is a big lake having a radius of 3-4 kms, located in the eastern part of Chengalpattu town with check dam located on the western side approximately 5 kms from Chengalpattu town. This could be the probable site of vector breeding (Fig.1). Hence, team visited those sites for vector collection and larvae collection (Fig 2). Vector and larvae were collected from the selected places according to the National Vector Born Disease Control Programme (NVBDCP) guidelines (NVBDCP, 2010).

Fig. 1. Location map of Chengalpattu town area.

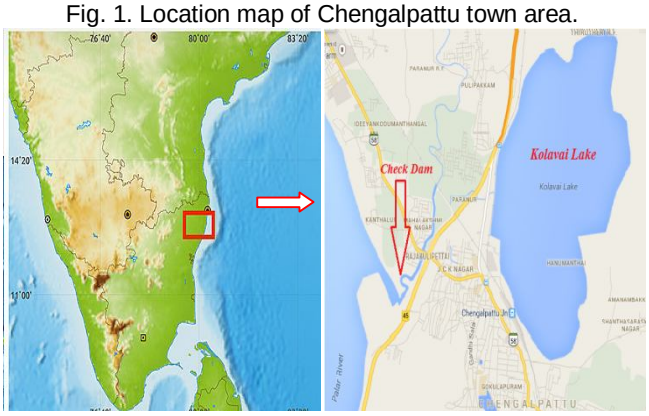

Fig. 2. Vector and larvae collection.

The Vector and larvae samples were sealed, labelled properly and sent to the Vector Control Research Laboratory (ICMR), Puducherry, for identification of Vector species along with the detailed report.

Results and discussion

It has been observed there is an increase in the Menace of flies resembling mosquito in the Chengalpattu town. The timing of the said vector was during 6.00 p.m to 9.00 p.m in the evening. Also, it has been noticed that biting of the same vector to the general population was not noticed. The vector are more attracted and adhered to the source of light. These three factors mainly non-biting, attracting towards light source and presence in the huge density itself goes against the mosquito vector. The detailed enquiry, conducted in all Govt. and Private health care sectors shows that there is no increase in incidence and prevalence of vector born diseases in Chengalpattu locality. The report from Vector Control Research Centre, (ICMR), Govt. of India, Puducherry, of the vector sample is found to be “Culicoids” species and “Chironomidae” species (Fig. 3). Culicoides is a genus of biting midges in the family Ceratopogonidae. Around 500 species of Ceratopogonidae are placed at present in the genus and this is split into many sub-genera.

Fig. 3(a). Culicoids and (b). Chironomidae species.

Several species are known to be vectors of various diseases and parasites which can affect animals. Bluetongue disease in cattle is caused by Culicoides vector (Ilango, 2006). Chironomidae (Chironomids or non-biting midges) are a family of nematoceran flies with a global distribution. They are closely related to the Ceratopogonidae, Simuliidae and Thaumaleidae. Many species superficially resemble mosquitoes but, they lack the wing scales and elongated mouthparts of the Culicidae (Kumar and Gupta, 1990). After going through literature, it has been noticed entomologically that both species are non-pathogenic to human beings. These species are mainly breeding in fresh water and found huge in quantity. They don’t have proboscis to suck the blood from the human being. However, it has been reported from the literature that these species are capable of BPV virus in birds and cattle population. The interpretation of outbreak investigation was intimated to the local health authorities and was also suggested for fogging measure with the due intimation to the concern health authorities.

Conclusion

Outbreak investigations confirm that a non-biting midge belongs to Culicoid and Chironomidae species which is non-pathogenic to human being, but simultaneously it produces Bluetongue disease in cattle and avian population. The constant vigil on increase in vector density is a key objective for control of vector borne disease.

Acknowledgements
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