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Dengue Fever: should we be concerned as Americans?

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Abstract. Dengue fever is a virus transmitted through mosquito bites. There are cases in many countries throughout the world that occur every few years. The disease does not kill many people, however, it can make the quality of life very poor and cause people to die who have underlying disease. There is no vaccine to prevent it, and it is a disease that we Americans should not take lightly. It is very possible for there to be an outbreak in the United States, therefore we need to all take precautions against it. An outbreak here or anywhere else in the world could negatively affect our economy in many different ways.

Keywords: One Health, Dengue fever, break bone fever, mosquitoes

Introduction

Dengue fever, also known as “break bone fever” is a sub-tropical viral disease that has been found in over 100 countries around the world. It occurs in several countries, including India, China, Taiwan, the Caribbean and many Pacific Islands. Gurugama stated that significant outbreaks now occur in five of six World Health Organization (WHO) regions (2010). Recently, it has been introduced to the United States in places such as Key West, Florida, and Hawaii (Eisen and Moore 2013). Dengue fever is caused by one of four strains, DENV 1, 2, 3 or 4 of virus. There are two species of mosquito (Diptera: Culicidae) that commonly serve as vectors for the disease, *Aedes aegypti* (L.) and *Aedes albopictus* (Skuse) (Gurugama et al 2010). Although they are similar, the two mosquitoes have different feeding habits. *Aedes aegypti* is the primary vector. They usually rest indoors mainly in living rooms and bedrooms, and are most active during dusk and dawn (Gurugama et al 2010). *Aedes albopictus* is the secondary vector. It is less important because it does not often bite humans (Gurugama et al 2010).

Background

According to Nishiura and Halstead, the infectious period starts at least a few days earlier than the symptomatic period (2007). The symptoms of Dengue Fever can be compared to those of the common cold or flu. Symptoms include high fever, aches and pains, fatigue and vomiting. The symptoms usually begin with what is called a biphasic fever. That is a fever with two distinct phases (Gurugama et al 2010). Sometimes Dengue Fever turns into dengue hemorrhagic fever (Nishiura and Halstead 2007). Dengue fever becomes dengue hemorrhagic fever when there is internal bleeding in the infected person. Dengue rarely becomes dengue hemorrhagic fever and only in extreme cases where the infected person was already sick with another illness. An itchy rash might appear on the skin near the end of the illness (Nishiura and Halstead 2007).

One Health

The One Health initiative is an initiative designed to unite all types of doctors of medicine for humans and animals. The purpose is for them to collaborate on research for different diseases. The initiative also works to improve the environment by cooperation among doctors and researchers from all over the world in different organizations and within communities worldwide.

Epidemiology

Dengue Fever is not often fatal. Anybody can get Dengue fever that can get bitten by a mosquito carrying the virus. The people who most commonly get it are people who live in areas where there is a large concentration of mosquitos competent for carrying Dengue fever virus. It is most often fatal in people who are immunocompromised including infants and elderly. Normally healthy people are not likely to die from

Dengue. However the effects of the symptoms can linger in a person for the rest of their lives, making the quality of life low. There is currently no vaccine to treat or prevent Dengue Fever, but vaccine development is the focus of current research and testing. The best way to prevent dengue fever is to prevent mosquito bites. Methods for this include but are not limited to insecticides, bed nets, and staying indoors during peak biting times.

Approach

Many researchers have taken several different approaches to studying dengue fever. In “Natural History of Dengue Virus (DENV)-1 and DENV-4 Infections: Reanalysis of Classic Studies” Nishiura and Halstead looked at different studies to see how the different strains of virus (DENV-1 and DENV-4) affected the infected person in different ways. For example they sought to find out if one strain of virus made the person sicker than the other.

Conclusions

In conclusion, we as Americans should be concerned about Dengue Fever. A large outbreak even without fatalities could have significant impact due to high morbidity and economic impact. *Aedes* eggs can survive for a long time (Gurugama et al 2010). This means transportation of them is possible. The United States has several states with competent environments for both vectors so it is very possible for an outbreak to occur if conditions are right. If Americans contract Dengue, they could be rendered unable to work for several weeks or even months because of their symptoms. This could have a serious detrimental effect on the economy. For example, if an infected person working at a low income job without adequate benefits could not go to work, they could not earn money and could even be fired. Just one person not being able to work and make money sets up a chain of events that could potentially lead to multiple people living in poverty or worse.

References

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