Original Article

Dengue in Rural setting of Rajasthan-an epidemiological study

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ABSTRACT

Background: In India, the disease reflects cyclic patterns, which over the years have increased in frequency and geographical extent. Over the past decade, the cases of dengue have increased more than 20 times; from 650 cases in 2000 to 15,535 in 2009. Considering these facts study was needed to see the epidemiological aspects along with few more objectives.

Aims: 1. To find out the sero-prevalence in rural area of north India 2. Survey and education of community for determinants of dengue fever.3. Imparting training and capacity build-up of the intern doctors and other health workers.

Material and methods: study was carried out during January 2015 to December, 2015 in rural area served by the Rural Health Training Centre run by the department of Community Medicine. Universal sample was taken covering all the houses in the villages under study. House to house survey was carried out by team comprises of intern doctors and field level health workers. Data was entered in Microsoft excel and analysed with SPSS.

Results: The most affected age group was 15 to 50 year, with 11 (44%) in the 20-30 years age group followed by the 10 to 20 year age group, with 05 (20%). The male-to female ratio was found to be 5.25:1. Following the definition for calculation in methodology section above in our study the bretea index was found to be 3.5% and house index was 0.65%.

Key words: Dengue, Epidemiology, Vector, Prevention, Rural

INTRODUCTION

Dengue viruses are arboviruses capable of infecting humans, and causing disease. These infections may be asymptomatic or may lead to (a) "classical" dengue fever, or (b) dengue haemorrhagic fever without shock, or (c) dengue haemorrhagic fever with shock [1]. India comes under the Category A with characteristics like a. Major public health problem; b. Leading cause of hospitalization and death among children; c. Hyper-endemicity with all 4 serotypes circulating in urban areas; and d. Spreading to rural areas [1]. Dengue is endemic in many parts of India and epidemics are frequently reported from various parts of India [2]. Dengue initially thought to be the urban problem but epidemiological study in rural areas are lacking. So we have decided to do the epidemiological study in the rural area that comes under the RHTC of community medicine department. An estimated 50 million dengue infections occur annually and approximately 2.5 billion people live in dengue endemic countries. Dengue fever (DF) inflicts a significant health, economic, and social burden on the populations of these endemic areas. The World Health Organization (WHO) South-East Region and Western Pacific Region bear nearly 75% of the global disease burden due to dengue.

In India, the disease reflects cyclic patterns, which over the years have increased in frequency and geographical extent. Over the past decade, the cases of dengue have increased more than 20 times; from 650 cases in 2000 to 15,535 in 2009. The case fatality rate is significantly high compared with other infectious diseases. Although, available data is largely derived from hospitalized cases, which represent dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS), the burden due to uncomplicated DF is nevertheless considerable [3].

AIMS AND OBJECTIVES

1. To find out the sero-prevalence in rural area of north India.
2. Survey and education of community for determinants of dengue fever.

3. Imparting training and capacity build-up of the intern doctors and other health workers.

MATERIAL AND METHODS

Learning by doing is the best method of getting knowledge and skills (Though it is a side activity but important). To implement this principle we have done a pre-activity training for a team consist of intern doctors posted in the department, PHN and Multipurpose Workers Male and Female. Active fever survey and survey for presence of larva of Aedes aegypti were carried out by the team. On founding the larva group health education and anti larval activity were carried out. Abat was used by making 2.5ml/10liter water. Dose for 1x1x1 feet is 20 ml of prepared solution. Generally we found 1x1x3 feet water storage tank for which about 80ml solution is needed. Education about day biting habit, cleaning and drying of water containers once a week without fail in season, empting and discarding of tires etc. to prevent further breeding. *Dengue Fever (DF)* is an acute febrile illness of 2-7 days duration (sometimes with two peaks) with

Two or more of the following manifestations:

1. Headache
2. Retro-orbital pain
3. Myalgia/arthralgia
4. Rash
5. Haemorrhagic manifestation (petechiae and positive tourniquet test) and
6. Leucopenia

In children, DF is usually mild. In some adults, DF may be the classic incapacitating disease with Severe bone pain and recovery may be associated with prolonged fatigue and depression. [4]

1. House index – Percentage of houses positive for larvae of Aedes *aegypti.*
2. Bretea Index – Number of positive containers for Aedes aegypti per 100 houses.
3. Container Index – Percentage of containers positive for Aedes breeding.
Data was entered in Microsoft excel and analysed with SPSS.

Study time frame: study was carried out during January 2015 to December, 2015.

Sampling and sample size: universal sample was taken covering all the houses in the villages under study.

Setting: Rural area served by the Rural Health Training Centre run by the department of Community Medicine.

RESULTS AND DISCUSSION

The most affected age group was 15 to 50 year, with 11 (44%) in the 20-30 years age group followed by the 10 to 20 year age group, with 05 (20%). The male-to female ratio was found to be 5.25:1.
Most of the affected patients were from agriculture back ground.

Table 1: Age and sex-wise distribution of positive dengue cases

Age Group	Male N (%)	Female N (%)	Total N
0-10	0(00)	0(00)	0(00)
10-20	4(80)	1(20)	5(100)
20-30	9(81.18)	2(19.72)	11(100)
30-40	4(100)	0(00)	4(100)
40-50	3(100)	0(00)	3(100)
>50	1(50)	1(50)	2(100)
Total	21 (84)	4(16)	25(100)

Overall incidence rate was 3.02 per thousand per year. For male it was 4.89 per 1000 per year and for female it was 1.01 per thousand per year. 4 cases were positive by ELISA and rest were from card test.

Epidemiological interpretation of various entomological indices

Following the definition for calculation in methodology section above in our study the bretea index was found to be 3.5% and house index was 0.65%. High risk of transmission of dengue fever in the community when Bretea index >50% & House index >10% and Low risk of transmission if Bretea index <5% and House index<1% [5].
Same scenario was reported by other author: In India, dengue fever has struck again. Some states of northern India felt the heat, the capital being the worst hit. There are reports that the infection had also spread to Maharashtra and Kerala. To compound the problem, a sister disease of dengue fever called Chikungunya fever is also on rise. [6]

Education

Two benefits of doing this activity. What team members have been trained during their training and whatever their earlier theoretical knowledge is being further strengthened by actual practice in the field. Principal of learning by doing is fulfilled here and this experience would help particularly doctors in their future clinical practice be it any specialties. Second important thing is behaviour change is expected when physical visit and demonstrating the things in front of the householders. Many a time

family members think that mosquito problem is a creation of other peoples' or governments' job not of them. But by demonstrating on the site only of the presence of active breeding would have long lasting impact on their thinking and behaviour change can be expected. By doing so we can be able to increase the community participation without which any program can be hardly successful.

The role of environmental factors in infectious diseases is well-known. In most countries, dengue epidemics are reported to occur, during the warm, humid, and rainy seasons, which favor abundant mosquito growth and shorten the extrinsic incubation period as well. In our study, the largest proportion of serologically positive cases was recorded in the post-monsoon period, which is in agreement with previous studies. [7]

Future prospects: on repeating activities of above sort we can have a healthy and preventive habits amongst the citizens. During transmission season every years if they themselves remain active we can have less and less morbidity and mortality from the mosquito borne diseases particularly dengue and malaria.

CONCLUSION AND RECOMMENDATION

From August to November is the peak season for Dengue cases in the post-monsoon period. This finding should be taken into the consideration to plan a preventive strategy to fight the life threatening epidemic. Study also suggests that the young adult male particularly in the productive age group is more at risk of getting the disease. Overall pictures gives the evidence of rural presence of the Dengue fever too. Involvement of trainee doctors in field activity results in to the better primary care physician for

holistic approach as far as prevention and control is concerned.

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