Vol 3 Issue 11 Dec 2013

ISSN No : 2230-7850

International Multidisciplinary Research Journal

Indian Streams Research Journal

Executive Editor
Ashok Yakkaldevi

Editor-in-Chief
H.N.Jagtap

Welcome to ISRJ

RNI MAHMUL/2011/38595 **ISSN No.2230-7850**

Indian Streams Research Journal is a multidisciplinary research journal, published monthly in English, Hindi & Marathi Language. All research papers submitted to the journal will be double - blind peer reviewed referred by members of the editorial board.Readers will include investigator in universities, research institutes government and industry with research interest in the general subjects.

International Advisory Board

Editorial Board

Address:-Ashok Yakkaldevi 258/34, Raviwar Peth, Solapur - 413 005 Maharashtra, India
Cell : 9595 359 435, Ph No: 02172372010 Email: ayisrj@yahoo.in Website: www.isrj.net

Indian Streams Research Journal
Volume 3, Issue.11, Dec. 2013
ISSN:-2230-7850
Available online at www.isrj.net

ORIGINAL ARTICLE

FIRST EVIDENCE OF DIPHTHERIA CASES IN DHUBRI DISTRICT OF ASSAM, INDIA

[1]Jitendra Sharma, [2]Mridul Malakar and [3]Sashi Gupta

1District Epidemiologist, Office of the Joint director of Health Services, Lakhimpur, Assam.
[2]Microbiologist, North Lakhimpur Civil Hospital, Lakhimpur , Assam.
[3]Microbiologist, Dhubri Civil Hospital, Dhubri, Assam.

Abstract:

First evidence of Diphtheria cases in Dhubri district of Assam were come into noticed during the year, 2013. Throat Swab specimens were collected by using sterile applicator stick from the suspected patients. Corynebacterium diphtheriae was detected among 30% of the collected samples. Most nos of suspected (11/20)/confirmed (4/6) cases were reported from Dharmasala BPHC. Children below 10 years were more vulnerable for Diphtheria infection. Sporadic cases of Diphtheria were found over the year in different parts of Dhubri district but rate of Diphtheria cases were high during the month of August-September. Affected peoples were inhabitants of chor area.

Key words: Corynebacterium diphtheriae, Dhubri, Infant, Rectal swab etc

KEY WORD:

Diphtheria is a highly infectious and potentially life threatening bacterial disease. It is caused by *Corynebacterium diphtheria* that spreads easily and occurs quickly [1]. It mainly affects the nose and throat and causes a bad sore throat, swollen glands, fever and chills (Immunization, Handbook for Medical Officers, MH&FW). As per the information provided by World Health Organization, a total of 4489 cases were documented during the year 2012. Children under 5 years of age groups and adults over 60 years old are particularly at risk for contracting the infection. The incidence of Diphtheria was found higher in a place where the people living in crowded or unclean conditions. Beside this, nutritional factor and low rate of immunizations is also playing an important role in Diphtheria transmission. The people who are getting in contact with poor hygiene are also at risk.

In 2008, India contributed 86.66% (6081/7017) of the Diphtheria cases reported globally [2]. However, the incidence of the disease has declined in India over the years because of wider vaccination coverage especially among children. During 2009-10, a major outbreak has been taken place in Dibrugarh district of Assam. During the outbreak, a total of 60 cases of suspected Diphtheria were reported out of which 18.18% were lab confirmed cases [3]. After this, no major outbreaks have been taken place in Assam. However till now some sporadic cases were also come into noticed, which were never investigated and documented. There are four combination vaccines used to prevent Diphtheria, Tetanus and Pertussis: DTaP, Tdap, DT, and Td. Two of these (DTaP and DT) are given to children younger than 7 years of age, and two (Tdap and Td) are given to older children and adults [4]. The Diphtheria, pertussis and tetanus (DPT) vaccine can prevent Diphtheria, but its protection does not last forever [5].

Environmental condition in this part of North East India is to some extent different from other states of India. Very limited earlier studies have been carried out on Diphtheria in Assam. So a study was conducted in Dhubri district of Assam to find out the rate of Diphtheria cases over the year. The study will provide better understanding on the epidemiological and demographic characteristics and risk factors of

Diphtheria cases. A Pearson-correlation analysis was also done to find out if there any correlation of Diphtheria cases with demographic characteristics.

2. MATERIALS AND METHODS:

Study area: Dhubri District (population-1949258 as per 2011 census) is the gateway of western Assam. It is a meeting place of different racial groups. The district is bounded both by inter-state and international border i.e. West Bengal and Bangladesh in the west, Goalpara and Bogaigoan district of Assam and Garo Hills district of Meghalaya in the east, Kokrajhar district in the north, Bangladesh and state of Meghalaya in the south, covering an area of 2,838 Sq. A time place and person analysis was conducted in Dhubri district of Assam.

Sample collection and processing: Throat Swab specimens were collected by using sterile applicator stick from the suspected patients having complained of sore throat, breathing difficulties, cough, tonsillitis etc. Smeared were prepared from throat swab specimen in Microscopic glass slide and allowed for air dry and fixed using flame and tarnished with Albert stain. Presence of rod shaped green color bacilli with bluish black granules in the both ends were identified through microscopic slide examination in 100X oil immersion field. Patients of all age groups and both the sexes were included in our study.

Principle of Albert staining procedure- Albert stain was used to demonstrate the presence of metachromatic granules found in Corynebacterium diphtheria. Toluidine blue and malachite green of Albert stain is taken by Corynebacterium diphtheria. The metachromatic granules of Corynebacterium diphtheria appears as bluish black and the bacillary body appears as green or bluish green.

3. RESULT:

The initial case of suspected Diphtheria was reported on 2nd February 2013. Majority of the suspected cases (55%) were observed from Dharmasala Block area of Dhubri district in Assam (Figure 2). Throat swab specimens were collected from randomly selected 20 nos of suspected patients. 30 % of the suspected samples were found Diphtheria positive in microscopic examination. Four out of six Diphtheria positive cases were observed from Dharmasala Block area. Males and Females were almost equally affected. Children below10 years of age groups were found more vulnerable for Diphtheria infection (Table 1). From clinical examination it was observed that 82% had cough and 64% had throat congestion. About 64% positive cases presented with a well defined pseudomembrane and 36% with tonsillar patch. Demographic characteristics showed that more than 70% of the affected people were having below poverty level. They were inhabitant of chor area near river and most of them were migratory people. Living standard and sanitation was found very poor in this locality. Vaccination status among the suspected patients showed that, 30 % of suspected cases were not taken Diphtheria vaccine, 20% were taken Diphtheria vaccine and the vaccination history of other 50% cases were unknown. However, all the Diphtheria positive cases were unvaccinated.

Statistical analysis showed that the age groups of 1-10 were more common to Diphtheria infection having a mean value of ±6.33 years (SD ±3.011). The two tailed unpaired p value is 0.0036 considered very significant. A negative co-relation was established between age groups and nos of suspected/confirmed Diphtheria. From this finding it was confirmed that the nos of Diphtheria cases decreases with increasing age having a coefficient of determination of r2=0.5470. The two tailed p value is 0.2604 considered not significant.

Table 1: Demographic characteristics of Suspected/conformed Diphtheria cases

Age groups	Number of Suspected Diphtheria cases	Number of Diphtheria positive cases
0 to 10	15	6
11 to 20	5	0
Sex		
Male	12	3
Female	8	3
Total	20	6

Figure 1: Number of Suspected/confirmed Diphtheria cases by Month

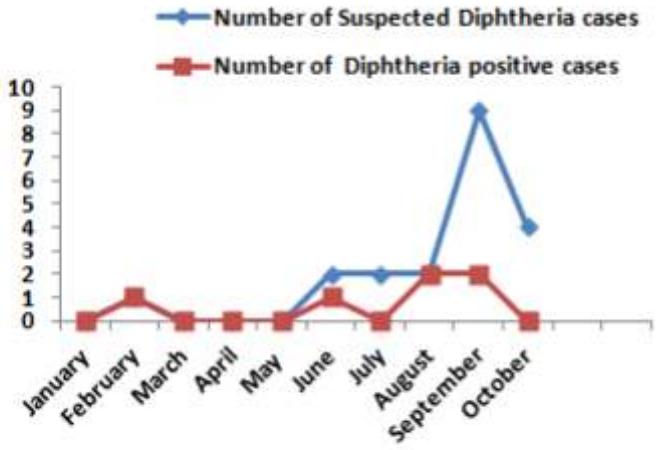
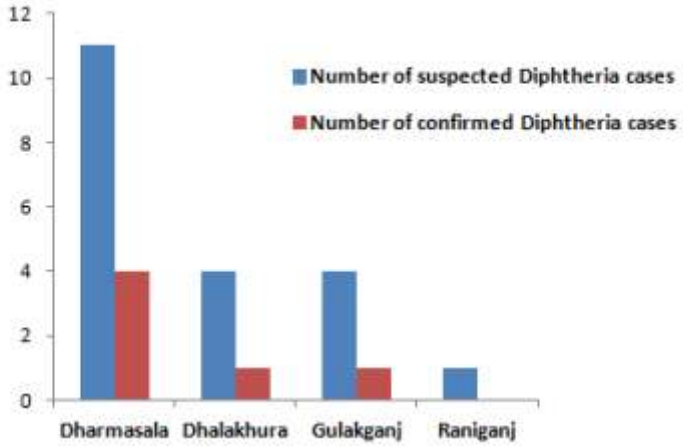


Figure 2: Block wise Suspected /Confirm Diphtheria cases in Dhubri district of Assam



4. DISCUSSION:

The Expanded Programme on Immunization (EPI) of WHO recommends three doses of DPT vaccine [3]. Results from the previous consequences it was observed that the rates of childhood immunization is very less in Assam [7]. The percentage of children of 12-23 months who have received all the vaccines as found in NFHS III was 31.7 in rural and 29.3 in urban areas [3,6,7]. Due to low vaccine coverage many small of moderate outbreaks has been taken place from time to time in Assam. However in recent years, no major outbreaks had been reported from Assam. Our study provided the information regarding occurrence of an outbreak of Diphtheria during the month of August to September, 2013 in Dhubri district of Assam (Figure 1). Several studies [8-10] carried out over the last few years at different places in this country also reported that Diphtheria occurs more frequently during the month of August to November. It may be because of early monsoon. Another immense apprehension is that, we found Diphtheria positive cases during the month of February and June also which was not reported by any earlier studies in this part of Assam. This is a matter of anxiety for public health. Mostly affected age groups were of 1-10 (median age group=±8) years showed similar finding with previous studies [8] (Table 1). However some findings confirmed an age shift of disease from children below 10 years to adolescents (10-15 years) without gender differences [3].

No case fatality rate was reported during the outbreak of Diphtheria. It is due to adequate health intervention done by the health authorities in early manner. From the study, it was suggested that early diagnosis and prompt treatment can diminish fatality rate. Previous study revealed that most of the Diphtheria cases were noticed typically from August-October having a significant case fatality rate [11]. In our study sporadic cases were reported over the year which is a matter of great concern for health department.

5. CONCLUSION:

During the study, a total 20 nos of suspected Diphtheria cases were observed in Dhubri district of Assam, 30% of them have shown the presence Corynebacterium diphtheriae in microscopic slide observation. Children below 10 years were more affected. Sporadic cases were found over the year. The incidence of suspected/confirmed Diphtheria cases was high under Dharmasala block in Dhubri district. Most nos of suspected/confirmed cases were reported during the month of August to September. Excellent surveillance system as well as suitable laboratory facility is essential to distinguish possible outbreak of Diphtheria as early as possible.

6. REFERENCES:

1.http://www.health.state.ny.us/diseases/communicable/fact_sheet.htm accessed on 14/11/2013.
2.WHO. Vaccine preventable disease monitoring system, global summary. Available fromhttp://www.who.int /vaccine documents/Global summary/Global summary pdf.
3.Nath B and Mahanta TG. Investigation of an outbreak of Diphtheria in Borborooah block of Dibrugarh District, Assam. Indian J Community Med. 2010; 35(3): 436–438.
4.Available from http://www.cdc.gov/VACCINES/VPD-VAC/diphtheria/default.htm accessed on 14/11/2013.
5.Available from http://www.nlm.nih.gov/medlineplus/diphtheria.html “Diphtheria” accessed on 14/11/2013.
6.Sutter RW, Jafari H, Aylward B. IAP recommendations on Polio Eradication and Improvement of Routine Immunization. Indian Pediatr. 2008; 45: 353–355.
7.Phukan RK, Barman MP, Mahanta J. Factors associated with immunization coverage of children in Assam, India: over the first year of life. J Trop Pediatr.2009; 55:249–252.
8.Patel UV, Patel BH, Bhavsar BS, Dabhi HM, Doshi SK. A retrospective study of diphtheria cases, Rajkot, Gujarat. IJCM. 2004; 29:161.
9.Laha PN, Misra NP. Diphtheria. Indian J Pediatr. 1956; 23:354–357.
10.Ray SK, Das Gupta S, Saha I. A report of diphtheria surveillance from a rural medical college hospital. J Indian Med Assoc. 1998; 96:236–238.
11.Bal GN, Burgos Rodriguez MM, Pastor D. Diphtheria outbreak in Cali, Colombia, August -October 2000. Epidemiological Bulletin. 2001; 22:3.

Jitendra Sharma
District Epidemiologist, Office of the Joint director
of Health Services, Lakhimpur, Assam

Publish Research Article
International Level Multidisciplinary Research Journal
For All Subjects

Dear Sir/Mam,

We invite unpublished Research Paper,Summary of Research Project,Theses,Books and Book Review for publication,you will be pleased to know that our journals are

Associated and Indexed,India

- International Scientific Journal Consortium
- OPEN J-GATE

Associated and Indexed,USA

- Google Scholar
- EBSCO
- DOAJ
- Index Copernicus
- Publication Index
- Academic Journal Database
- Contemporary Research Index
- Academic Paper Databse
- Digital Journals Database
- Current Index to Scholarly Journals
- Elite Scientific Journal Archive
- Directory Of Academic Resources
- Scholar Journal Index
- Recent Science Index
- Scientific Resources Database
- Directory Of Research Journal Indexing

Indian Streams Research Journal
258/34 Raviwar Peth Solapur-413005,Maharashtra
Contact-9595359435
E-Mail-ayisrj@yahoo.in/ayisrj2011@gmail.com
Website : www.isrj.net