A Report of Three Cases of Diphteria in a Tertiary Care Hospital

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ABSTRACT

Most of the vaccine preventable diseases have shown a decline with the advent of UIP (Universal Immunisation Programme) but Diphteria is still endemic in our country. Persistence or resurgence of Diphteria in the country is mainly due to low coverage of primary immunization as well as booster doses. We report three cases of Diphteria in children who attended paediatric care unit in a tertiary care hospital.

Case I

An 8 year old female child was brought to the Intensive Paediatric care unit, King George Hospital, Visakhapatnam with complaints of fever, cold, cough and sore throat for one day duration in the month of February 2015. There was a history of similar complaints in elder brother of the patient who was 9 years of age and he died suddenly with cough, cold, fever and respiratory difficulty 10 days prior to the...
admission of this child. On oral examination exudative follicular tonsillitis with hypertrophy with a greyish white patch and pharyngeal congestion (Figure 1) was present. Cervical lymph nodes were enlarged. The child was vaccinated but booster doses were not received as per UIP. A provisional diagnosis of Diphtheria or H1N1 was made. In addition to routine general investigations Nasopharyngeal swab in VTM (viral Transport Media) and throat swabs for Gram’s stain, Albert’s stain, culture & sensitivity were sent to the Department of Microbiology.

Case II

A male child of age 3 years was admitted in IPCU (Intensive Paediatric Care Unit) one week after the first case with complaints of high grade fever with chills & rigors, throat swelling & pain since 7 days. There was no history of cold and cough. On oral examination greyish white patch on tonsils and pharyngeal congestion was present, cervical lymphadenopathy with swelling of neck (Bull’s neck) (Figure 2)(Figure 3) was present. The child received primary immunisation as per UIP (Universal Immunisation Programme) and one booster dose. A provisional diagnosis of acute pharyngitis was made. In addition to routine general investigations, throat swab for Gram’s stain, Albert’s stain, culture & sensitivity was sent to the Department of Microbiology.

Case III

A male child of age 8 years was brought to the paediatric OPD 10 days after the 2nd case with complaints of fever, cold, cough and throat pain since 3 days. On oral examination exudative follicular tonsillitis, hypertrophy of tonsils and pharyngeal congestion were present. Cervical lymphadenopathy was present and the history of receiving of booster doses was improper. A provisional diagnosis of Diphtheria was made. In addition to routine general investigations throat swab for Gram’s stain, Albert’s stain, culture & sensitivity was sent to the Department of Microbiology.

In all the three cases examination of the throat swab revealed characteristic bacilli with metachromatic granules in cuneiform arrangement on Albert’s stain(Figure 4) and club shaped / dumbbell shaped, pleomorphic Gram positive bacilli on Gram’s stain (Figure 5). Growth on potassium tellurite agar (Figure 6) showed black colonies & on Loefflers serum slope (Figure 7) the colonies were small, circular white opaque, enlarged with a distinct yellow tint on continued incubation.

Based on cultural characteristics & biochemical reactions the isolate was suspected as Corynebacterium diphtheriae biotype mitis. The H1N1 report was negative for the first case as there was suspicion of H1N1.

Results and Discussion

Diphtheria which was common among less than five years age children in the past, is now affecting older children (5-19 years) and adults (Havaldar, 1992). The majority of the cases are reported from children who were non-immunised or partially immunised against diphtheria. Persistence or resurgence of Diphtheria in the country was mainly due to low coverage of primary immunization as well as the booster doses. According to the WHO –UNICEF estimates (WHO, 2010), the DPT3 coverage was 66% in 2008, where as, according to the three National Family Health Surveys (National Family Health Survey (MCH and Family planning India, 1995; National Family Health Survey (NFHS-3), 2005-06), DPT3 coverage during 1992-2006 was only 52-55%. Immunity
acquired through primary immunization wanes in early childhood. Hence adequate coverage of booster doses is equally important (Manoj et al., 2011).

**Figure.1** Oral Examination Showing Exudative Follicular Tonsillitis with Hypertrophy with a Greyish White Patch and Pharyngeal Congestion

![Image of oral examination showing tonsillitis](image)

**Figure.2** Cervical Lymphadenopathy

![Image of cervical lymphadenopathy](image)

**Figure.3** Swelling of Neck (Bull’s neck)

![Image of swelling of neck](image)
**Figure.4** Albert’s Stain Showing Green Bacilli with Purple Coloured Metachromatic Granules

**Figure.5** Gram’s Stain Showing Dumbbell Shaped Gram Positive Bacilli

**Figure.6** Potassium Tellurite Agar Showing Black Colonies
In our study all the three cases were from the nearby areas. The history of booster doses of vaccination was improper in 2 children more than 5 years of age and another child was 3yrs old who received only primary immunization and one booster dose. All the three cases were recovered on administration of macrolide group of antibiotics (Figure 8) & supportive therapy in IPCU(Intensive paediatric Care Unit). Achieving and maintaining high level of immunity especially among infants and children by high coverage of primary & booster immunization against Diphtheria and maintenance of cold chain is necessary to reverse the trend of disease in India.

References


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**How to cite this article:**
doi: [http://dx.doi.org/10.20546/ijcmas.2016.504.077](http://dx.doi.org/10.20546/ijcmas.2016.504.077)