UTILIZATION OF ANTIRABIES VACCINE IN PASTEUR INSTITUTE, MEGHALAYA: A THREE YEAR ASSESSMENT

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ABSTRACT

Aim: To assess the anti-rabies vaccine utilization for a period of three years

Methods: A retrospective cross sectional study on dog bite cases reported in the antirabies clinic of Pasteur Institute, Shillong. The data were analyzed for utilization of vaccine in the Department of Pharmacology, NEIGRIHMS, Shillong.

Result: A total of 11,324 cases were reported and none was previously immunized. Total of 10,785 (95.2%) patients belonging to Category II and III received TCARV administered intramuscularly. Ciprofloxacin/Amoxycillin/ Cephalosporins and Paracetamol/ Ibuprofen were the most frequently used antibacterial and anti-inflammatory agents. All 10,785 number of Category II and III patients received Tetanus toxoid.

Conclusion: The incidence of dog bite as observed, increased moderately each year. Prompt administration of tissue culture antirabies vaccine available in the clinic was in accordance with WHO guidelines. Lack of awareness on proper vaccination of pet animals, increase in number of stray dogs and delay in getting treatment for prevention of rabies need to be addressed from time to time.

KEYWORD: Rabies, WHO category, Tissue culture antirabies vaccine.

INTRODUCTION

Dogs are commonly kept as pets by most household in North-eastern India. Despite their usefulness, keeping a dog that is rabid can be risky. Rabies is caused by Lyssavirus belonging to Rhabdoviridae family. Other animal responsible for transmitting rabies are cats and...
foxes.\textsuperscript{[1]} The term is derived from the Latin word “rabies”, meaning "madness". This, in turn, may be related to the Sanskrit word “rabhas”, meaning "to do violence".

Rabies is a neglected disease of poor and vulnerable population, whose deaths are rarely reported. Almost 40\% of the victims are children under 15 years of age.\textsuperscript{[2]} The incidence is difficult to ascertain due to the absence of surveillance in the area. Deaths occur in rural areas where medical facilities are scarce and also due to lack of awareness. Rabies virus is usually transmitted by the bite of an infected animal or contamination of broken skin by saliva. The virus is usually present in the nerves and saliva of a symptomatic rabid animal. The route of infection is usually, but not always, by a bite. It takes several weeks for infection to become apparent.\textsuperscript{[3,4]} However, with timely and proper vaccination the disease is 100\% preventable. Vaccine preparations are known to vary from country to country but there is little difference in terms of safety and antigenicity of human vaccines.

The objective of this retrospective study was to assess the incidence of dog bite and utilization of anti-rabies vaccines over 3 years in Antirabies clinic of Pasteur Institute Meghalaya, India.

\textbf{Method}

Pasteur Institute, Shillong, Meghalaya is one of the oldest and premier Institute of North-eastern part of India erected in 1915 to the Memory of His Majesty the King Emperor Edward VII by Public subscription in the then Bengal and Assam during the British Rule. All clinical and suspected cases following dog bite reported at the clinic and documented in the Institute over 3 years were included in the study after approval was obtained from the Government of Meghalaya, India. Table 1 & Table 2.

\textbf{Table 1: Categories of Bite Receiving TCARV.}

<table>
<thead>
<tr>
<th>Year</th>
<th>Category II</th>
<th>Category III</th>
<th>Total (Category II &amp; II)</th>
<th>Total number of cases (Category I, II, II)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>710</td>
<td>2,845</td>
<td>3,555</td>
<td>3,687</td>
</tr>
<tr>
<td>2012</td>
<td>587</td>
<td>3,000</td>
<td>3,587</td>
<td>3,769</td>
</tr>
<tr>
<td>2013</td>
<td>860</td>
<td>2,783</td>
<td>3,643</td>
<td>3,868</td>
</tr>
<tr>
<td>Total</td>
<td>2,157</td>
<td>8,628</td>
<td>10,785</td>
<td>11,324</td>
</tr>
</tbody>
</table>
Table 2: Age/Sex Wise Distribution of Dog Bite

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Children</th>
<th>Adult</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>3,687</td>
<td>1,863</td>
<td>1,824</td>
<td>2,319</td>
<td>1,368</td>
</tr>
<tr>
<td>2012</td>
<td>3,769</td>
<td>1,916</td>
<td>1,853</td>
<td>2,383</td>
<td>1,386</td>
</tr>
<tr>
<td>2013</td>
<td>3,868</td>
<td>1,917</td>
<td>1,951</td>
<td>2,275</td>
<td>1,593</td>
</tr>
<tr>
<td>Total</td>
<td>11,324</td>
<td>5,696</td>
<td>5,628</td>
<td>6,977</td>
<td>4,347</td>
</tr>
</tbody>
</table>

RESULTS

A total of 11,324 victims reported following dog bite and were diagnosed and categorized according to WHO criteria. Incidence of dog bite among children and adults showed almost same percentage of 50.3% and 49.69% but with male preponderance of dog bite victims of 1.6:1. Patients diagnosed as category II and category III (19.04% and 76.19%) received anti-rabies vaccines (TCARV) of potency not less than 2.5 IU/ml which was administered by intramuscular route in the deltoid region and the anterolateral aspect of the thigh of small children on days 0, 3, 7, 14 and 28. Simultaneously, patients in Category III also received treatment with Equine Rabies Immunoglobulin at 20 IU/kg body weight that was initially instilled at the area of bite and the remainder given intramuscularly after an initial test dose.

DISCUSSION

Dog bite was observed to be one of the rare cases of emergencies reported at the centre. A total of 11,324 victims reported following dog bite and none was previously immunized. They were all suspected cases of dog bite as informed by patients and among them males were more in number which confounds to the reported by Iyalomhe GBS.[5] WHO has recommended wound washing as first line of treatment for all dog bite cases as this may remove most of the viruses present in the areas of bite.[2] The awareness in this region regarding wound washing is still lacking coupled with the still ongoing traditional method of managing bite cases at home which in most cases result in sepsis due to contamination. Owners of pet animals tend to leave them out in the open which has proven disastrous for neighbours and visitors of the area. The utilization of Tissue culture antirabies vaccine after the initial phasing out of Neural tissue vaccine from the year 2006 onwards has provided a boon to the patients of dog bite with 100% protection. The incidence of rabies in well immunized patients and also adverse vaccine reaction like paralysis etc. have not been observed with the TCARV.
Tetanus toxoid has been administered to all cases belonging to Category II & III dog bite cases for possible contamination of *Clostridium tetani*. Quinolones are the most frequently used antibacterial drugs for the treatment of injuries. Cephalosporins were most frequently utilized among children along with analgesics and anti-inflammatory drugs like Ibuprofen and Diclofenac. Pre-exposure prophylaxis has been recommended for persons regularly at high risk of exposure, such as certain laboratory workers and animal handlers in the forest and wildlife departments.

Reports of mild hypersensitivity reactions in the form of local pain, erythema were present but serious hypersensitivity reactions during therapy were rare.

**CONCLUSION**

World Health Organization (WHO) has fought to break the "cycle of neglect" affecting rabies prevention and control particularly in low- and middle-income countries through advocacy, surveys and studies and research on the use of new tools and observes September 28th as ‘*World Rabies Day*’. The WHO supports targets for elimination of human and dog rabies in all Latin American countries by 2015 and of human rabies transmitted by dogs in South-East Asia by 2020. In unvaccinated humans, rabies is usually fatal after neurological symptoms have developed, but prompt post exposure vaccination as seen in our study prevents the virus from further progression and hence no casualties. Lack of awareness on proper vaccination of pet animals, increase in number of stray dogs and delay in getting treatment for prevention of rabies need to be addressed from time to time. This pilot study is intended to impart awareness to the medical fraternity to ensure prompt management of the cases, with proper reporting and timely referral of the cases for saving lives of victims of animal bites.

**REFERENCES**