National Journal of Medical and Allied Sciences

[eISSN: 2319 – 6335 |Editorial |Open Access]

Website:-www.njmsonline.org

RABIES: A CHALLENGE TO PUBLIC HEALTH

Pankaj Bhardwaj[1], Pankaja R Raghav[1], Deepak B Saxena[2]

1. Department of Community Medicine & Family Medicine AIIMS Jodhpur
2. IIPH Gandhinagar

Author for correspondence: *Dr. Pankaj Bhardwaj, Assistant Professor, Department of Community Medicine & Family Medicine AIIMS Jodhpur , Email: pankajbhardwajdr@gmail.com*

'Rabies' has been derived from Sanskrit word 'Rabhas' which means 'to do violence'. It is also believed to be originated from the Latin word 'Rebere', which means 'to rave', meaning 'talking irrelevantly' (delirium). The disease is also known as 'Jalasanthra', which means agony caused by water. A viral zoonotic disease primarily infecting domestic and wild animals, rabies spreads to people through close contact with infected saliva via bites and scratches. There is no treatment available globally after the disease develops.

Rabies is present in all continents except Australia and Antarctica. Among the remaining continents, many countries are free from rabies such as Japan, Malaysia, Oman, Qatar in Asia; Great Britain, Scandinavian countries, Spain and Portugal in Europe; Guyana, Uruguay and Jamaica in the Americas and Fiji and Papua New Guinea in Oceania. The incidence of Rabies in these countries is zero because of stringent regulations adopted for the dogs.

India is estimated to have the highest incidence of rabies globally, with 30000 of the world's 50000 cases reported each year.1 India has 36% of the global and 65% of the Asian rabies burden in terms of cases. In collaboration with key partners, Government of India is working with other countries to tackle the problem.[2] Various organisations are involved in control activities without any inter-sectoral coordination. The existing prevention activities are being carried out by municipal bodies, but no tangible results have been achieved.

Strategies to prevent deaths due to rabies were developed through a pilot project during the 11th Plan. Acknowledging that rabies is a major public health challenge in India, the government proposes to make it a priority disease for control under the 12th Five Year Plan.[3] Experience gained from the implementation of the pilot project indicates that the strategy is feasible, reproducible and implementable. It is now proposed to roll out a comprehensive control strategy for both human and animal components in the 12th Plan. All 35 States/Union Territories will be covered for the human component and the animal component will be piloted in selected 30 cities. The programme will include training health professionals to deal with animal bites, awareness creation and minimizing animal bites. On the veterinary side, the focus is on sterilization and vaccination of dogs, with a larger involvement of civil society and municipal bodies.

The WHO says prevention of human rabies is possible through mass dog vaccination, promotion of responsible dog ownership and dog population control programmes with a partnership approach. Many countries in South America and Asia have successfully used this strategy to eliminate transmission of rabies.

However, this is a challenge for India as it has a large population of dogs (around 25 million) and very low vaccination coverage. One in six

persons[4]receiving some form of antirabies post-exposure prophylaxis (PEP) following a bite from a potentially rabid dog shows that - despite progress in reducing yearly rabies deaths to around 20,000 (estimated incidence of 1.9 per 100,000 in. 2003)[5] - much remains to be done to control human rabies in India.

Clinical trials conducted in India proved intra-dermal (ID) route to be safe, efficacious and feasible for use of anti rabies vaccines in the country. National authorities after expert consultations approved the use of ID route for administration of Cell Culture Vaccines (CCVs) in the country in February 2006. The guidelines of animal bite management were revised with inclusion of ID administration of anti-rabies CCVs in 2007.[6]

Use of intradermal route of administration of anti-rabies vaccine allows wider coverage of Post-Exposure Prophylaxis (PEP) in available quantity of vaccines and hence makes it cost effective. WHO recommended use of ID route for administration of anti-rabies vaccines in 1992. Based on WHO recommendation and results of various safety, efficacy studies and feasibility trials conducted by ICMR, Drug Controller General of India (DCGI) approved the use of intra-dermal vaccination regimen for rabies post-exposure prophylaxis.[7]

Based on the available studies and prevailing cost factors a comparative study of Intra-Dermal Rabies Vaccination (IDRV), Semple vaccination and modern vaccines by intramuscular route show that IDRV would cost nearly one third of the intramuscular Essen regimen (five dose schedule).[8]

When the intradermal route is used, precautions include staff training, conditions and duration of vaccine storage after reconstitution, use of appropriate 1 ml syringe and short hypodermic needles. This ethical and cost-effective anti-rabies vaccination is now very well implemented across country. From May 2006, Govt. of Uttar Pradesh has started using IDRV in its Anti-Rabies Clinic. After starting it in phase wise manner the IDRV programme is introduced throughout the country. [7]

In India, IDRV has been implemented in 15 states so far, Jammu and Kashmir, Delhi, Rajasthan, Gujarat, Jharkhand, Uttar Pradesh, Madhya Pradesh, Tripura, West Bengal, Odisha, Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu, and Kerala.

The updated Thai Red Cross Intradermal (TRC-ID) regimen is the most effective strategy for India as it uses only 40% volume (i.e. 0.1 ml per ID site for 2 sites) of vaccines in comparison with intramuscular (IM) when 0.5 ml vial is used and 20% when 1-ml vial is used; hence, the cost-effectiveness of intradermal (ID) regimen further increases when 1 ml vial is used. To improve the compliance of ID, post exposure prophylaxis (PEP) is given free of cost in many states. For availability and avoiding administrative delays, universal ID delivery of PEP is already in place. ID is safe, effective, and well tolerated. Technique of ID can be learned easily. Universal ID with 1 ml is the ethical solution, which is easy to administer and monitor, economical, effective, and imparts early immunity[8.]

Even after having guidelines for use of IDRV for post exposure prophylaxis, there are still some issues which are needed to be addressed such as in spite of free availability of ID vaccines, reluctance of Medical Officers for their use. The issues can very well be addressed by having multi-centric studies which will help in exploring barriers and operational challenges for its use at Primary Health Centers and Community Health Centers.

Competing Interest: None declared
Funding: Nil

References:

1. CDC Yellow Book 2012
2. Bulletin World Health Organ 2009;87:890–891
3. 12th Plan priority for rabies control, accessed from http://www.thehindu.com/news/national/12th-plan-priority-for-rabies-control/article3942934.ece
4. Travasso C. Only a sixth of animal bite victims in India get antirabies treatment. BMJ 2013;347:f6040–f6040. doi:10.1136/bmj.f6040
5. Sudarshan MK, Madhusudana SN, Mahendra BJ, et al. Assessing the burden of human rabies in India: results of a national multi-center epidemiological survey. Int J Infect Dis 2007;11:29–35. doi:10.1016/j.ijid.2005.10.007
6. National guidelines on Rabies Prophylaxis, 2013, NCDC, Government of India, New Delhi.
7. M.K.Sudarshan, B.J.Mahendra ,D.H. Ashwath Narayana. Introducing intra-dermal rabies vaccination in India: Rationale and action plan. Accessed on 16/02/2014 from rabies.org.in/rabies-journal/rabies-07/intradermal.htm.
8. Mathew T. From Guidelines to Ground Reality: Maximizing the Benefits of IDRV in the Fourth Year of Its Implementation. Indian J Public Health 2012;56:187-8.

Citation : *Bhardwaj P, Raghav PR, Saxena DB. Rabies: A Challenge to public health. National Journal of Medical and Allied Sciences 2013;2 (2):1-3*