



Rabies Control-It's Time To Move On

Dinesh Kumar, Sanjana Gupta

It is an irony that rabies finds itself clubbed with brucellosis, anthrax, bovine tuberculosis, cysticercosis and echinococcosis or so called 'neglected' diseases because these are not adequately addressed nationally and internationally (1). Multiple reasons including public health magnitude, successful preventive strategies and 100% fatality among others is what separates rabies from other group of diseases in this category (1,2).

No body perhaps has any doubts about its public health importance. Sample these statistics and any lingering doubts will disappear even if the statistics are laden with uncertainty. Worldwide nearly 55,000 deaths (90% CI 24,000-93000) take place leading to loss of 1.74 million DALYs annually (90% CI 0.75-2.93) (3). Since more than two decades, India continue to report 25,000 to 30,000 human rabies deaths annually i.e., nearly 60% of the global deaths. The above figure is best seen as gross underestimate since the statistics are projected on the basis of data emanating from isolation hospitals, and the consideration that rabies is not a notifiable disease (4).

The prevention and control of rabies is multipronged. Control of human and canine rabies has largely hinged upon pre and post exposure prophylaxis and dog population control measures. None of the strategies can be relied upon solely and a genuine mix is therefore recommended for control of rabies in a particular region.

The annual incidence of animal bites is reported between 0.21% to 1.9% or 2 to 19 per thousand population per year. This translates into more than 17 million episodes of animal bites in India (4). Mass vaccination of dogs is considered as the most cost-effective way to achieve a

significant and lasting reduction in the number of human deaths from rabies. Predominance of rabies in rural and remote regions, in poor populations, lack of resources, lack of epidemiological information such as levels of vaccine coverage are issues that are often seen as reasons for low priority being assigned to canine rabies control even in endemic regions (1). However, in many parts of Asia and Africa the vaccination coverage established in the dog population (30% to 50%) is not high enough to break the transmission cycle of the disease. Needless to say that the prospects of canine rabies control by mass vaccination looks promising only if a high coverage (more than 70%) can be achieved and sustained (5,6). Animal birth control however is an effective supplementary strategy to control urban feral dog population based on twin benefits of reducing dog turnover and number of dogs susceptible to rabies (7).

Dog removal has not been shown to be effective in rabies control. There is no evidence that removal of dogs alone has ever had a significant impact on dog population densities or the spread of rabies considering that the population turnover of dogs is very high so that even highest recorded removal rates have not shown any decrease in dog population densities. Moreover, dog removal may be unacceptable to local communities. However, the targeted and humane removal of unvaccinated, ownerless dogs may be effective when used as a supplementary measure to mass vaccination (6). We shall now revisit and explore the potential of pre and post exposure prophylaxis in the control of human rabies. At the heart of the discussion is the moot point

From the PG Deptt. of PSM, Govt Medical College, Jammu J&K- India

Correspondence to : Dr Dinesh Kumar Head of Department, PG Department of PSM, Govt Medical College, Jammu J&K-India.



that such large number of deaths (one in less than 30 minutes) is unacceptable particularly in the presence of an effective vaccine (4). The control of human rabies has witnessed many changes in a decade or so. Stoppage of the production of nervous tissue vaccine limited the capability of public health to deal with rabies for some time and affordability of modern cell culture vaccines has been overcome to certain extent due to cost cutting and successful adoption of intra-dermal route of administration of cell culture vaccines. New policy initiatives are required to save thousands who fall prey to the dreaded disease annually.

Rabies in children has not received the emphasis it deserves. Available figures reveal that nearly 40% of the victims of animal bites are children aged less than 15 years (8). School children are at particular risk as they play with dogs, tease them frequently and can be easily be overpowered by dogs. Majority of the dog bites in children are not reported as child may be alone with dog, may not impart significance to few abrasions or may not reveal the truth to his/ her parents because of fear of injections. Incubation period also tends to be shorter in children due to their lesser body surface area and frequent bites on head and neck.

With intra-dermal route of administration gaining widespread use, the cost for pre exposure prophylaxis has significantly reduced. Pre-exposure prophylaxis also simplifies management by eliminating the need for rabies immunoglobulin (RIG) and decreasing the number of doses of vaccine needed in case someone gets bitten by an animal. Compared to pre exposure prophylaxis, a patient nearly has to spend two times if he/she has category II animal bite and 10 times if Rabies immunoglobulin is also administered in case of category III exposure. The cost escalates to 30 times if human immunoglobulins are needed such as in patients having hypersensitivity to anti rabies serum from equine source.

Hence, the induction of rabies vaccine for pre exposure prophylaxis becomes necessary fallout and it needs to be

included in national immunization schedule. To start with, infants or children at school entry could be offered the vaccine. Planning commission of India (11th and 12th Plan document), WHO and Indian Association of Paediatrics Committee on Immunization (APCOI) has advocated pre exposure prophylaxis for certain high risk groups like veterinarians, vaccine handlers, wild life personnel and children (9,7,10).

We suggest that pre exposure protection to children is given priority as a short and medium term strategy in order to further reduce child mortality till the time other proven strategies like mass vaccination in dogs and animal birth control can be taken on large scale.

References

1. Bourhy H, Dautry-Varsat A, Hotez PJ, Salomon J. Rabies, Still Neglected after 125 Years of Vaccination. *PLoS Negl Trop Dis* 2010; 4(11): e839.
2. Rabies: A neglected zoonotic disease. Available at: <http://www.who.int/rabies/en/index.html>. Accessed on 12th, Jan 2012
3. Knobel DL, Cleaveland S, Coleman PG, I, *et al.* Re-evaluating the burden of rabies in Africa and Asia. *Bull World Health Organ* 2005; 83: 360-68.
4. Assessing burden of rabies in India. WHO sponsored national multicentric rabies survey (2004). Available at: <http://rabies.org.in/rabies/wp-content/uploads/2009/11/APCRI-WHO-Survey-Report.pdf>. Accessed on 12th Jan 2012
5. WHO strategies for the control and elimination of rabies in Asia. Report of a WHO interregional consultation. Geneva, Switzerland, 17-21st July 2001. Geneva, World Health Organization, 2002 (WHO/CDS/CSR/EPH/2002.8).
6. Matter HC. Study of the dog population and the rabies control activities in the Mirigama area of Sri Lanka. *Acta Tropica* 2000; 75(1):95-108.
7. WHO expert consultation on rabies. First Report. Geneva, World Health Organization, 2005 (WHO Technical Report Series no. 931)
8. Rabies Factsheet (2011). Available at: <http://www.who.int/mediacentre/factsheets/fs099/en/>. Accessed 21st August 2011
9. Report of working group on disease burden for the 12th five year plan. WG-3(1): Communicable diseases. Planning Commission, Govt. of India
10. IAPCOI 2011 recommendations on use of available vaccines. Available at : <http://www.iapcoi.com/hp/pdf/14-%20RABIES%20VACCINES.pdf> accessed 12th Jan 2012