INDIAN ASSOCIATION OF EPIDEMIOLOGISTS

Epidemiology International
Volume 10, Issue 1 - 2025, Pg. No. 1-3
Peer Reviewed & Open Access Journal

Commentary

"Madhusudana-Bharti-Uppinder" Protocol for Post-Exposure Prophylaxis (PEP) in animals in Himachal Pradesh, India saves lives and economy of rural India

Omesh Kumar Bharti[1], Anil Sharma[2], Uppinder Kumar[3], Hamender Sharma[4], Pururava Sharma[5]

[1]Deputy Director & State Epidemiologist, Department of Health and Family Welfare, Government of Himachal Pradesh, India
[2]Veterinary Officer, [3]Deputy Director (Rtd), [4]Senior Veterinary Officer, [5]Veterinary Officer, Department of Animal Husbandry, Himachal Pradesh, India
DOI: https://doi.org/10.24321/2455.7048.2024010

I N F O

Corresponding Author:
Omesh Kumar Bharti, Department of Health and Family Welfare, Government of Himachal Pradesh, India
E-mail Id:
bhartiomesh@yahoo.com
Orcid Id:
https://orcid.org/0000-0001-5178-1503
How to cite this article:
Bharti O K, Sharma A, Kumar U, Sharma H, Sharma P. "Madhusudana-Bharti-Uppinder" Protocol for Post-Exposure Prophylaxis (PEP) in animals in Himachal Pradesh, India saves lives and economy of rural India. Epidem Int. 2025;160(1):1-3.

Date of Submission: 2025-07-04
Date of Acceptance: 2025-08-08

A B S T R A C T

Livestock are backbone of rural economy but always a neglected area. In a survey done in Ethiopia, the estimated rabies cases incidence was 1.75 in bovines, 18 in dogs, 2.37 in equines, 2.28 in cats and 0.37 in shoats per 10,000 animals annually.[1] The annual cost of livestock losses due to rabies is also substantial: approximately US$ 12.3 million (90% CI, 11–13.7 million)[2] in endemic Africa and Asia, disproportionately affecting the rural poor who depend upon livestock for subsistence. In 2016, 7 of 21 bovine bitten by rabid dogs died due to rabies in Shimla Municipality in Himachal Pradesh who were given only IM rabies vaccination as PEP. This scenario prompted the authors to look for a suitable protocol, based on human studies, to save animals. In 2017, various schedules of Intra-dermal Rabies Vaccination (IDRV) were tested in bovine along with only local wound infiltration of equine Rabies Immunoglobulin (eRIG) and were found to be life saving in all of them (100%) even if bitten by lab confirmed rabid dogs/mongoose as tested by laboratory at Central Research Institute, Kasauli, Himachal Pradesh, India.[3] Even animals like cows, buffalos (Figure 1) and horses that were given rabies vaccine intramuscularly (IM) and additional local wound infiltration of eRIG survived rabid dog bites. Thereafter, the department of animal husbandry in Himachal Pradesh purchased 50 vials of eRIG that were given to major Veterinary polyclinics for local wound infiltration along with rabies vaccination. About 150 animals survived without any fatalities reported. In 2022, 21 dogs and 2 bovines were bitten by a lab confirmed rabid dog and we have to use expired eRIG in emergency that saved all of the animals.[4] In another study 131 animals that included 98 dogs and 23 cows presented for post-exposure prophylaxis at the Veterinary Polyclinic in Rampur Bushahr, Shimla, India and all were given IM or IDRV rabies vaccination with additional local wound infiltration of eRIG and all survived with both IDRV and IM rabies vaccination having equal efficacy.[5] PEP failures have been

reported when vaccine was given but not the RIG as detailed above and also when vaccine was given inducing adequate protective titers (0.5 IU/ml) however we missed some abrasions[6] that were sufficient for rabies virus entry to the brain causing rabies as is the case of sheep we administered the PEP.[7] Despite some studies showing less immunogenicity with IDRV compare to IM rabies vaccination,[8] we had high survival of livestock with the addition of eRIG wound infiltration as an additional component of PEP following "Madhusudana-Bharti-Uppinder" Protocol.

The additional only wound infiltration of eRIG can be life saving in animals as has been the scenario with human-beings[9,10] that was later recommended by WHO[11] in its latest guidelines and need to be incorporated into PEP schedules of livestock across the globe to save animal lives from dreaded rabies and prevent economic losses to rural poor especially across Africa and Asia.

Conflict of Interest: None

Source of Funding: None

Figure 1.Local wound infiltration with Rabies Immunoglobulins in Bovine using insulin syringe

ISSN: 2455-7048
DOI: https://doi.org/10.24321/2455.7048.2024010

References

1. Wakgari M, Getachew G, Van't Klooster G, Tewolde N, Kivaria F, Bebay C. Participatory epidemiological study on the burden of rabies in animals and humans in three districts of Buno Bedele Zone, West Ethiopia. Ethiopian Veterinary Journal. 2022 Aug 29;26(2):93-106. [Google Scholar]
2. Knobel DL, Cleaveland S, Coleman PG, Fèvre EM, Meltzer MI, Miranda ME, Shaw A, Zinsstag J, Meslin FX. Re-evaluating the burden of rabies in Africa and Asia. Bulletin of the World health Organization. 2005;83:360-8. [Google Scholar] [Pubmed]
3. Bharti OK, Sharma UK, Kumar A, Phull A. Exploring the feasibility of a new low cost intra-dermal pre & post exposure rabies prophylaxis protocol in domestic bovine in Jawali Veterinary Hospital, District Kangra, Himachal Pradesh, India. World Journal of Vaccines. 2018 Feb 5;8(1):8-20. [Google Scholar]
4. Sharma AK, Bharti OK, Prakash VC, Lakshman D, Isloor S, Panda AK, Sharma J. Survival of 21 Dogs after Post-exposure Prophylaxis using Intra-dermal Rabies Vaccine in the Pre-scapular Region and Emergency Use of Expired Equine Rabies Immunoglobulin for Local Wound Infiltration in Victims of Rabid Dog Bite using One Health Approach. Epidemiol. Int. 2022 Dec;7:12-8. [Google Scholar]
5. Sharma AK, Bharti OK, Panda AK, Sharma J, John D, Isloor S. Post-Exposure Prophylaxis in Animals: Insight on Biting Animals, Nature of Bites and Comparative Cost Analysis of Intradermal and Intramuscular Routes of Administration. [Google Scholar]
6. Bharti OK, Chand R, Chauhan A, Rao R, Sharma H, Phull A. "Scratches/Abrasions without bleeding" cause rabies: A 7 years rabies death review from medical college Shimla, Himachal Pradesh, India. Indian Journal of Community Medicine. 2017 Oct 1;42(4):248-9. [Google Scholar] [Pubmed]
7. Bharti OK, Vyas A, Sharma UK, Sharma M. Failure of Rabies Post-exposure Prophylaxis Despite Achieving Adequate Antibody Titers in a Goat at Veterinary Hospital Rehan, District Kangra, Himachal Pradesh, India. [Google Scholar]
8. Wangmo K, Laven R, Cliquet F, Wasniewski M, Yang A. Comparison of antibody titres between intradermal and intramuscular rabies vaccination using inactivated vaccine in cattle in Bhutan. Plos one. 2019 Jun 10;14(6):e0209946. [Google Scholar] [Pubmed]
9. Bharti OK, Madhusudana SN, Gaunta PL, Belludi AY. Local infiltration of rabies immunoglobulins without systemic intramuscular administration: An alternative cost effective approach for passive immunization against rabies. Hum Vaccin Immunother. 2016 Mar 3;12(3):837-42. doi: 10.1080/21645515.2015.1085142. PMID: 26317441; PMCID: PMC4964710.; https://pubmed.ncbi.nlm.nih.gov/26317441/
10. Bharti OK, Thakur B, Rao R. Wound-only injection of rabies immunoglobulin (RIG) saves lives and costs less than a dollar per patient by "pooling strategy". Vaccine. 2019 Oct 3;37 Suppl 1:A128-A131. doi: 10.1016/j.vaccine.2019.07.087; https://pubmed.ncbi.nlm.nih.gov/31395454/
11. WHO Expert Consultation on Rabies: WHO TRS N°1012; Third report; 14 April 2018 | Guideline; https://www.who.int/publications/i/item/WHO-TRS-1012

ISSN: 2455-7048
DOI: https://doi.org/10.24321/2455.7048.2024010