

Title: Failure to dilute Rabies Monoclonal Antibodies puts patients at risk of Rabies

Author: Dr. Omesh Kumar Bharti¹, Dr. Natasha Premanisakul²

1. State Institute of Health & Family Welfare, Kasumpti, Shimla, HP, India
2. Medical Graduate, Bangkok, Thailand

Keywords Rabies, RmAbs, Infiltration, eRIG, scratches, Dilution of RIG, Mental Trauma.

Abstract

A rabid cat scratched a 25 year old lady all over the body. The lady was given rabies vaccination and rabies monoclonal antibodies, RmAb, into some prominent scratches only. RmAb was not diluted to cover all scratches due to unawareness of diluting RmAbs. Later she was advised to get eRIG infiltration into remaining scratches at different centre as treating doctor refused to infiltrate remaining scratches fearing interference to vaccine response. As a precaution RFFIT was done and no interference was noticed as RFFIT titres were 7.5 IU/ml. This underlines importance of physicians' knowledge to dilute RmAbs enabling to infiltrate all wounds/scratches so as to save patients from the risk of rabies or metal trauma of impending rabies..

CASE REPORT

Failure to dilute Rabies Monoclonal Antibodies puts patients at risk of Rabies

Dr. Omesh Kumar Bharti¹, Dr. Natasha Premanisakul²

¹State Institute of Health & Family Welfare, Kasumpti, Shimla, HP, India

²Medical Graduate, Bangkok, Thailand

ABSTRACT :

A rabid cat scratched a 25 year old lady all over the body. The lady was given rabies vaccination and rabies monoclonal antibodies, RmAb, into some prominent scratches only. RmAb was not diluted to cover all scratches due to unawareness of diluting RmAbs. Later she was advised to get eRIG infiltration into remaining scratches at different centre as treating doctor refused to infiltrate remaining scratches fearing interference to vaccine response. As a precaution RFFIT was done and no interference was noticed as RFFIT titres were 7.5 IU/ml. This underlines importance of physicians' knowledge to dilute RmAbs enabling to infiltrate all wounds/scratches so as to save patients from the risk of rabies or mental trauma of impending rabies.

Keywords; Rabies, RmAbs, Infiltration, eRIG, scratches, Dilution of RIG, Mental Trauma

CASE REPORT:

Rabies is a deadly disease and kills more than 59,000 people worldwide. Failure of Rabies Post Exposure Prophylaxis (PEP) is mainly due to delay in seeking PEP and improper PEP in terms of inadequate wound wash, Vaccination and non infiltration of each and every wound or scratch with rabies immunoglobulins. Here we report a case of 25 years old female student who found a sick cat on the road and rescued it and brought it home. Cat appeared to be sick and scratched the lady extensively all over the body (Fig 1). Lady, out of love allowed the cat to scratch herself if it gives relief to the cat. She took the cat to a vet clinic next day for treatment as cat was persistently vomiting. Cat was over reactive to slightest of stimulus, had fever 96.9° F and had dilated pupils not responding to light. Cat was also disoriented and had abnormally high neurological irritation. Suspicion of rabies in cat was explained to the lady and later the brain sample of cat was sent to Department of Microbiology, Bombay Veterinary College and was found to be positive by Lateral Flow Assay (LFA) for detection of Rabies Antigen (Rabies AG TEST Kit, lot No-1801D011Code DEN). In the mean time the lady went to nearby Municipality Hospital for PEP. She was administered rabies vaccine and Rabies Monoclonal Antibodies (RmAb) Rabishield 223 IU @ 3.33 IU/Kg body weight. The lady had mild reaction in the form of loose stools, nausea/vomiting and pain abdomen etc. The doctor did not dilute the RmAb despite instructions to do that if more volume of RmAb is required³ and infiltrated only main scratches with the available volume of Rabishield. Many scratches could not be infiltrated due to small calculated volume of the Rabishield (Approx 5.5 ml). The lady when contacted the authors after 4 days of the incident was advised to contact the doctor again at Bombay and ask him to infiltrate the remaining scratches. The doctor refused to do that saying more than calculated volume of Rabishield may interfere with the vaccine response. The lady thereafter rushed to Himachal Pradesh, her home state, where all remaining scratches were infiltrated with 3 ml of diluted Equine Rabies Immunoglobulins, eRIG along with administration of remaining doses of Rabies Vaccine. eRIG was chosen for infiltration of additional scratches as it has higher IU/ml i.e. 300 IU/ml and its dilution would yield higher IU/ml since multiple scratches were by a rabid cat and risk was high. Also recently in China, a four years eight months old girl child bitten by a confirmed rabid dog was given wound infiltration of HRIG diluted 15 times and she survived⁴.

All through the lady remained under the constant fear of Rabies due to inadequate PEP. Later her serum sample was sent to National Institute of Mental Health & Neurosciences (NIMHANS), Bangalore for Rapid Fluorescent Focus Inhibition Test, RFFIT and Rabies Virus Neutralizing Antibody (RVNA) titers were found to be 7.5 IU/ml of serum, proving that additional

***Corresponding Author :** Dr. Dhanusha Chandran, Junior Resident, Department of Community medicine, Government Medical College, Thiruvananthapuram, Phone : +91-9961709085, Email: dhanushach9@gmail.com

Received : 28.04.2022

Revised : 10.05.2022

Accepted : 20.05.2022

Published : 30.06.2022

infiltration of remaining scratches did not interfere with the vaccine response. Patient is doing fine and is out of mental trauma after almost two months of incident. Similar reports have been received from other parts of India and Thailand and underlines importance of physicians' knowledge regarding dilution of RmAbs to infiltrate all wounds and scratches to save patients from rabies or metal trauma of impending Rabies. However, in Bangkok only would infiltration with Rabishield was done with smaller volume to infiltrate the scratches and patients were fine but dilution volumes are not clear in this regards. Remaining Rabishield was stored at 4 degrees to be shared with other patients who required it.

CONCLUSION :

Serial dilution studies need to be done to ascertain how many times different RmAbs can be diluted to remain effective for local wound infiltration and same need to be extensively disseminated among physicians by organizing workshops and seminars for them. Also using the left out vol. of RmAbs in the opened vial for other patients needs to be studied for wider cost effectiveness of RmAbs as in Thailand one vial cost was about 13000 Bhat.

REFERENCES:

1. Hampson K, Coudeville L, Lembo T, Sambo M, Kieffer A, et al. (2015) Correction: Estimating the Global Burden of Endemic Canine Rabies. PLOS Neglected Tropical Diseases 9(5): e0003786. <https://doi.org/10.1371/journal.pntd.0003786>
2. Wilde H. Failures of post-exposure rabies prophylaxis. Vaccine 2007; 25:7605-9; PMID:17905484; <http://dx.doi.org/10.1016/j.vaccine.2007.08.054>
3. RABISHIELD RABIES HUMAN MONOCLONAL ANTIBODY: https://www.seruminstitute.com/product_ind_rabishield.php
4. Zhu Z, Huang S, Lu S, Zhang M, Meng S, Hu Q, Fang Y. Severe multiple rabid dog bite injuries in a child in central China: continuous 10-year observation and analysis on this case. Hum Vaccin Immunother. 2020; 16(4):904-6. <https://pubmed.ncbi.nlm.nih.gov/31710515/>



Fig 1: Extensive Scratches by Rabid Cat all over the body