

CASE REPORT

A case of dog bite in a COVID19 positive adult male from Bangalore, Karnataka

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ABSTRACT

A case of dog bite in a 33 years COVID Positive adult male is presented here. The patient had a dog bite while travelling to the hospital for investigations. He was referred to Kempegowda Institute of Medical Sciences Hospital and Research centre, Bangalore for management. The patient had Category-III exposure and was provided complete Post Exposure Prophylaxis at the antirabies clinic including all 5 doses of intramuscular anti rabies vaccine. Two weeks after the last dose of vaccination, the virus neutralizing antibodies were assessed using RFFIT test at NIMHANS, Bangalore and found to have protective titres against rabies. The patient was followed up for 90 days and found to be alive and healthy.

INTRODUCTION:

Animal bites/exposures to humans is a public health problem; posing a potential threat of rabies to over half of the population worldwide. In India, an estimated 17.4 million animal bites occur annually.¹ In rabies endemic countries, where every animal bite is potentially suspected as rabid exposure, the exposed individuals should be provided complete post exposure prophylaxis (PEP) at the health-care facility to prevent rabies.²

Post exposure prophylaxis consists of thorough wound washing with soap/detergent and water, followed by application of virucidal agents to reduce the viral inoculum at the wound site; a complete course of post exposure vaccination to induce antibodies which prevents the risk of virus entering peripheral nerves after an exposure from a rabid animal and timely infiltration of RIG/rabies monoclonal antibodies (RMAb) in all Category III exposures to neutralize the virus at the wound site. Early and complete PEP will prevent the disease, even after high-risk exposure to potentially rabid animals^{3,4}

Corona virus disease (COVID 19) is an infectious disease caused by a newly discovered Coronavirus (SARS-CoV). The disease spreads through direct, indirect or close contact between people. WHO recommends a set of measures to prevent spread of infection like identification of those with symptoms and immediate isolation of patient and contact, wearing of mask, following hand hygiene frequently, respiratory etiquette, physical distancing, ensure good environmental ventilation and disinfection.⁵

Rapid Fluorescent Foci Inhibition Test (RFFIT) is a virus neutralizing antibody test, used to monitor antibody levels in persons who have risk of exposure or those who have received post exposure prophylaxis. The RFFIT is a rabies virus neutralization test performed in cell culture to determine the rabies virus neutralizing antibody level. Immuno-fluorescent staining of infected cells is used as an indicator of rabies virus replication. Complete neutralization of rabies virus at a serum dilution of 1:5 (~0.11 IU/mL) is recommended by the ACIP as evidence that an individual still has a detectable level of rabies virus neutralizing antibodies.⁶

We are describing a case of dog bite in a COVID19 Positive adult male. The confidentiality of the patient was maintained and IEC clearance for the study was obtained.

THE CASE:

A 33-year-old adult male residing in JP Nagar area of Bangalore, Karnataka had developed cough and fever for 3 days and

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was diagnosed with COVID 19 on 17th May,2021 by Real-Time Polymerase Chain Reaction (RTPCR)(Picture 1).He had a history of stray dog bite while travelling for COVID19 follow up investigations on the morning of 26th May 2021.

Ref. by Dr : KUSHI DIAGNOSTICS KUSHI DIAGNOSTICS		Final Test Report			Printed Date : 17/05/2021 12:50			
		Sample Date : 16/05/2021 20:51	Page 1 of 2					
Spec. Type	Test Name	Results	Previous Results (Date)	units	Reference Ranges	Verified by	Verified date	verified time
PANDEMIC COVID 19 (RTPCR)								
SPECIMEN	Throat / Nasal Swab					Dr. Senthilraja	17/05/2021	06:12
COVID 19 (E Gene)	POSITIVE (Ct-28)				RT PCR Method (Approved by ICMR)	Dr. Senthilraja	17/05/2021	06:12
COVID 19 (ORF Lab Gene)	POSITIVE (Ct-27)				RT PCR Method (Approved by ICMR)	Dr. Senthilraja	17/05/2021	06:12
SARS-CoV-2	POSITIVE				RT PCR Method (Approved by ICMR)	Dr. Senthilraja	17/05/2021	06:12

He was referred to the Anti Rabies Clinic (ARC), Kempegowda Institute of Medical Sciences Hospital and Research centre (KIMSH & RC), Bangalore by the local physician. The bite was unprovoked, on bare skin and bleeding was present. The wound was washed immediately with soap and water; however he had applied turmeric powder over the wound (Figure-1). Status of the dog was unknown and unavailable for observation. Patient did not had any previous history of animal bite/ pre exposure prophylactic vaccination.



Figure-1: Application of Turmeric over the wound

Investigations done in view of COVID 19 showed that Haemoglobin was 13.5gm/dl, Random blood sugar was 123mg/dl, D dimer was 0.08ug/ml, Serum Ferritin was 388.6ng/ml, all within normal limits. C Reactive Protein (16.2mg/L) and Total count (5400c/cmm) were elevated. Chest X Ray appeared normal.

The patient was on antivirals (T. Fluvir), antibiotics (T.Doxycycline), antihistamines, antiseptic, anti-Inflammatory and anti-viral supplement (T.Immuno axis), multivitamin and multimineral supplement (T Zincovit).

As the patient was covid19 positive, Personal protective measures like wearing of N95 face mask, face shield, gown and gloves were used by the treating physician and the assisting nurse. Health professionals who had received two doses of COVID 19 Vaccine (the second dose was 2 weeks prior) were involved in the examination and management of the patient in a well-ventilated room with minimal staffing. The patient was also advised N95 mask and face shield as additional precaution.

On examination, the patient was moderately built and nourished, with no signs of pallor, icterus, cyanosis, clubbing, lymphadenopathy and oedema. Systemic examination was normal. Patient had sustained 3 abrasions (category III exposure) over the posterior aspect of the left lower limb around 2x2cms. Wound was cleaned (Figure-2).



Figure-2 : Wound after cleaning

Post exposure prophylaxis was started at the anti rabies clinic with the 1st dose of intramuscular anti rabies vaccine (Rabivaxs) administered into the right deltoid along with injection Td administered into the left deltoid. All the bite wounds were infiltrated with Equine Rabies Immunoglobulin after the test dose; as per the calculated dose of 40IU/Kg body weight. The requirement for 73 kgs was 9.7ml (2920 IU) The entire volume was infiltrated into and around the wound. Patient was observed for half an hour after administration of the immunoglobulin for any adverse events.

Subsequently, the patient had taken all doses of anti rabies vaccination i.e., on Day 3(30/05/21), Day 7(03/06/21), Day 14(10/06/21) and Day 28(24/06/21) as per the schedule. Patient complained of headache following vaccination on 3/06/21, no other adverse events were observed during the time of follow-up. He had also recovered from Covid 19 during this period.

According to WHO recommendation, RVNA titer of ≥ 0.5 IU/ml is considered as protective against rabies after complete course of anti rabies vaccination. Therefore, 2weeks following the last dose of vaccination i.e., on 08/07/21, the patients serum was obtained and sent for virus neutralizing antibody assay by Rapid Fluorescent Foci Inhibition Test (RFFIT) performed in Department of Neurovirology, NIMHANS, Bangalore which is a WHO reference and research centre. The results showed he had protective RVNA titers of 60 IU/ml(Picture 2). Patient was followed up for 90 days and found to be alive and healthy.

Age :	33 years	Lab Reference No:	
Gender:	Male	Report Generated Date:	15/07/2021 01:58 PM
Ward Name/Collection Centre:	Sample Collection Center-Administrative Block	Lab Name:	Neurovirology

Sample Details : V-2107120063 (Serum)

RABIES NEUTRALIZING ANTIBODIES-SERUM*

Report:
Rabies virus neutralizing antibody (RVNA) titre by Rapid fluorescent focus inhibition test (RFFIT) in serum is **60 IU/mL.**

Interpretation:
Suggestive of adequate titres of RVNA post-vaccination.
(Values equal to or above 0.5 IU/mL suggest adequate titres of RVNA post-vaccination)

DISCUSSION:

COVID 19 Pandemic has disrupted essential health care services all round the globe. Temporary closures of health facilities due to non availability of health workforce, financial challenges, essential medicines, diagnostics, and the PPE are few of the reasons. As a result, millions of people are still unable to access vital health care.⁶

A case of covid19 was reported to Anti Rabies Clinic, KIMSH&RC, Bangalore during the peak of the second wave in India. Covid 19 vaccines were yet to be made available to adults. The ARC has been functioning as referral centre to animal bite cases during the pandemic. The staff in the ARC wore adequate PPE and managed the subjects.

According to a study conducted in a Paediatric hospital in UK, there was a significant increase in the mean monthly number of dog bite attendances when COVID-19 lockdown was implemented.⁷

A case of rabies encephalitis in a 4½-year-old male child with an exposure to a suspect rabid dog was admitted in covid hospital indicating the need for adequate post exposure prophylaxis in these difficult times at all hospitals⁸

All cases must be managed; as RIG/ RMAb and Rabies vaccination are lifesaving, the treatment should not be delayed. The ARC must be well ventilated with adequate lighting and the staff working are vaccinated against Covid19. N-95 MASK, Face shield, gloves and gowns area must along with informing the subject to wear N-95 mask and face shield(non face bites).

A study conducted by **Qing-Xia Ma** et al, showed that N95 masks blocked nearly all the mock virus, and medical masks blocked approximately 97% of the virus, and the homemade mask blocked approximately 95% of the virus.⁹ Two RCTs by **Vittoria Offeddu** compared respiratory infection risk in HCWs wearing rPPE continuously to controls wearing nor PPE. Wearing a medical mask or N95 respirator throughout the work shift showed significant protection against respiratory illness.¹⁰

In case, the subject is hospitalized, the course of vaccination should be continued in the COVID-19 hospital /care centre. In case the subject has been started on high dose steroid, a booster dose may be needed. In cities where facilities are available, the rabies virus neutralizing antibody test (RFFIT) may be done to know the protective antibody levels. The case should be followed up until his last dose of vaccination and given the ARC contact number in case of emergency as per recommendation by APCRI (Association of Prevention and Control of Rabies)¹¹

A patient with suspected rabid dog category III bite with presence of SARS COV-19 infection associated with HIV infection reported to an Institution in Kolkata. He received full dose of anti rabies treatment including thorough wound toilet, vaccine and immunoglobulin. An additional dose of PVRV were administered on day 21 to further boost up memory cells in order to achieve higher antibody response.¹²

Thirty-seven patients presented with mammalian bite injuries in April and May 2020 to a hospital in England. Study suggests that during the COVID-19 pandemic majority of bite injuries can safely be managed with washout under local anaesthesia and oral antibiotics and discharged on the same day.¹³The number of dog bites reported to the anti rabies clinic in a hospital in Srinagar, India during the lockdown period showed a decrease in the number of dog bite cases reported during the lockdown.¹⁴

Tina Damodar, Reeta S. Mani ,P. V. Prathyusha in NIMHANS, Bangalore sera was received for RFFIT from 84 patients. RFFIT was positive in sera of 22/84 (26.1%) patients tested. Titres ranged from 0.937 to >960 IU/ml (mean 140 IU/ml). Of these 22 patients, 5 patients did not receive any prior vaccination, 16 patients had received partial or complete vaccination. Of the 22 patients who were positive by serum RFFIT, 17 patients were also positive for CSF RFFIT, 2 patients were positive by PCR and 1 patient was positive by both CSF RFFIT and PCR. Therefore, serum RFFIT alone could confirm a diagnosis of rabies in 2 patients.¹⁴

The pandemic has taken a toll on humanity and it is important that we as doctors do not abdicate our responsibilities. The main objective of this case report is to highlight the presence of animal bite exposure in the current pandemic and the need for proper management of such cases. Post Exposure Prophylaxis is life-saving in all animal exposures. A complete course of anti rabies vaccination and rabies immunoglobulin/rabies monoclonal antibodies in all category III exposure must be administered, even if they have Corona virus disease.

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