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Case report

RABIES: NEED FOR ACTIVE AND PASSIVE IMMUNISATION

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ABSTRACT

Rabies is an acute highly fatal viral disease of the CNS caused by Lyssavirus Type-I. It has a long and variable incubation period. It is a communicable disease of man that is always fatal. The combined administration of a single dose of anti rabies serum with a course of vaccine, together with local treatment of the wound is the best specific prophylactic treatment after exposure of man to rabies. Here, we report a case of rabies, who developed the disease in spite of having taken three doses of anti rabies vaccine (Post exposure).

Keywords: Rabies Immunoglobulin, Human Diploid Cell Vaccine, Post-exposure Prophylaxis, Intra-dermal Regimen.

INTRODUCTION

Rabies is a zoonotic disease of warm blooded carnivore animals. It is transmitted to man usually by bites or licks of rabid animals on broken skin and mucous membrane.

Human Rabies is endemic in India. According to a recent WHO estimate, 55000 deaths occur annually due to human rabies globally 20,000 (36%) of which occur in India.[1]

CASE REPORT

A female patient aged 55 years presented to the Casualty of a secondary care hospital in Assam with history of feeling feverish, headache, vomiting and increased irritation since the morning of 29.05.2012. She was admitted to the hospital with a provisional diagnosis of Acute Sinusitis / Headache for evaluation. At admission on physical examination vitals were stable, mild frontal sinus tenderness was seen, and rest of the systemic examination was normal. Complete blood count, Random Blood Sugar, Serum Creatinine, Serum Electrolytes, Liver Function Test, complete Urine examination were within normal limit. Tests for the peripheral smear of malaria and Rapid test for Scrub Typhus was Negative. Chest-X-Ray and ECG were within Normal limit.

After admission, in the ward she was found to be reluctant to drink water. Further examination revealed agoraphobia, hydrophobia and a healed wound on the nasal bridge.

On reviewing history, the patient's attendant revealed that the patient had been bitten by a street dog on the nasal bridge 2 weeks ago. The patient was taken to a local physician and given HDC vaccine-Rabipur on '0' day - 1st dose, 3rd day - 2nd dose, 7th day - 3rd dose ; post exposure. The 4th dose was not taken, as the patient developed symptoms of rabies two days prior to the 4th dose. The patient was however not RIG advised.

The patient was well until 27.05.2012 (14 days after the dog bite) doing all household work. The neither relatives nor patient could tell about the fate of the dog. A clinical diagnosis of rabies was made. The

patient was discharged on request and advised to go to a higher Centre.

DISCUSSION

The prophylaxis of rabies is with an Anti rabies vaccine and rabies Immunoglobulin. The Post exposure Prophylaxis depend on the category of the wound.[2]

Approach to Post-exposure Prophylaxis (PEP): Management of animal bite wound:

Wound Toilet: Rabies virus enters the human body through a bite or scratch. An efficient wound toilet can be done by prompt and gentle washing with soap and flushing the wound with running water for 10 minutes. Considering the importance of this step all clinics that are likely to encounter patients with dog bites should have wound washing facilities.

Passive immunization – rabies Immunoglobulin (RIG): RIG should also be administered as passive immunisation for immediate protection before the development of immunity from the vaccine, It should be given at the same time as the first dose of vaccine and no later than 7 days after the first dose.[2] Rabies vaccine and RIG should never be administered at the same site or in the same syringe.

Two types of Rabies antibody preparations are available: Human rabies immunoglobulin (HRIG) and Equine rabies immunoglobulin (ERIG).

The recommended dose of ERIG is 40 International units (IU) /Kg [3] up to a maximum of 3000 IU [2], ERIG may be occasionally associated with anaphylaxis. A skin test may be performed prior to the administration of ERIG but WHO does not advocate skin sensitivity test (SST) anymore.[4] The recommended dose of HRIG is 20 IU/Kg[3] up to a maximum of 1500IU.[2] Adverse effect of HRIG includes local pain and low grade fever.

The wounds should be infiltrated with RIG (if anatomically feasible) and the remainder of the dose should be given intramuscularly (IM) in the gluteal region. If the exposure involves a mucous membrane, the entire dose should be administered IM. With multiple or large wounds, the RIG may need to be diluted for adequate infiltration.

Active Immunisation – Anti rabies Vaccine: HDC vaccines are mostly used as they are generally safe and highly potent. All age groups of animal bite victims of category II and III require the same number of injections and dose per injection. The category III exposures in addition require administration of rabies immunoglobulin. The vaccination schedule recommended for Post exposure Prophylaxis consist of 6 doses (1 ml each) on days 0, 3, 7, 14 and 28 and a booster dose on day 90. Injections are given intramuscularly (deltoid).[2]

Intra-dermal (ID) Regimens: The use of this route leads to considerable savings in terms of the total amount of vaccine needed for a full Post-exposure vaccination. A vaccine which has been approved by Drug Controller General of India (DGCI) for use by intra-dermal route have to be used [2] .The vaccines used are same; however route, dose and site of administration differ. The Regimen approved by DGCI has updated Thai Red Cross schedule (2-2-2-0-2).[2]

Approach to a patient requiring RIG when none is available: In circumstances when no immunoglobulin is available greater emphasis should be given to proper wound toileting followed by Essen schedule. [2]

RIG is life saving biologic in patients with severe exposure to rabies, but scarce and expensive. Worldwide less than 3% of risk exposure cases receive RIG and it is often not injected into wounds.[5,6] Fear of anaphylaxis with ERIG and the cost of HRIG are the main barrier. ERIG is indigenously produced, less expensive, more widely available. ERIG should be promoted as an 'institutional product'[7] and given by trained persons in all first referral unit (FRU) hospitals. The safety profile of ERIG is good in many studies.[8] Post exposure prophylaxis applied adequately is highly effective in prevention of human disease but its use is low in India (2.1%).[9] The compliance to vaccine in India is 40.5%.[9]

After recognition of a rabies exposure, when a patient approaches a local physician, exposure has to be assessed to see which category it falls into. The need for RIG and active immunisation has to be stressed and informed to the patient by the local physician. In our case, the patient should have been administered RIG along with the first dose of rabies vaccine or been informed of the need to enable the patient to approach a higher centre for the same.

Rabies can be confirmed in patients early in the illness by antigen detection using immuno fluorescence of skin biopsy, and by virus isolation from saliva and other secretions. These tests are not available in our hospital, therefore they were not done.

CONCLUSION

The approach to the management of rabies consists of wound toilet, active and passive Immunisation should be made available at the Primary Health Centres (PHC) across the country.

As HRIG is expensive, ERIG can be used as it is less expensive and more widely available. WHO has recommended the use of intra-dermal (ID) route of administration of HDC vaccine which not only reduces the cost of Post-exposure Prophylaxis, but also allows wider coverage in available quantity of vaccine?

This case shows the need for the combined administration of RIG and Anti rabies vaccine in every case of exposure of man to rabies. Every instance of human exposure should be treated as a medical emergency.

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