INADEQUACY OF ACTIVE IMMUNIZATION ALONE IN PREVENTION OF RABIES (A Case Report)

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ABSTRACT

A case of dog bite where prompt immunization with antirabies vaccine alone proved inadequate in prevention of fatal rabies is reported to emphasize upon the need of concomitant passive immunization with either human rabies immune globulin or equine antiserum.

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KEY WORDS : Rabies; Active immunization; Passive immunization.

Introduction

In view of high mortality rate of clinical rabies post exposure prophylaxis is of the utmost importance. The WHO expert committee on rabies recommends the combined administration of antirabies serum and vaccine, together with local treatment of the wound, for the best possible prophylaxis of rabies in all cases of severe exposure [1]. We report a case of fatal rabies encephalitis developing despite prompt administration of purified chick embryo cell (PCEC) rabies vaccine without rabies immune globulin (RIG).

CASE REPORT

A 44 years aged patient sustained a class III (on the head) unprovoked bite by a stray dog and was started on postexposure prophylaxis with PCEC rabies vaccine (Rabipur) the same day in his native town. Passive immunization was not given to him by the treating doctor probably because of nonavailability. He received 4 doses of PCEC rabies vaccine on days 0, 3, 7 and 14 as intramuscular injection in the deltoid region. The potency of the vaccine batch was confirmed subsequently. On day 14 after the bite, the individual became symptomatic with headache, fever, vomiting and malaise (incubation period 14 days). He was admitted to the hospital on day 16. There was no past history of any major illness. The positive findings on examination at the time of admission were fever, tachycardia and signs of meningeal irritation. Optic fundi were normal. Blood counts (haemoglobin 14 gm%, TLC 8300/cmm), urinalysis, metabolic profile and

chest skiagram were normal. CSF showed proteins 30 mg%, sugar 50 mg% and 40 WBCs/cmm, predominant cell type being lymphocyte. Blood, urine and CSF cultures were sterile. Over the next 48 hours, he developed signs of autonomic dysfunction (dilated unequal pupils, excessive salivation, perspiration) and brainstem dysfunction (bilateral ptosis and dysphagia). He died of an apnoeic spell 5 days after onset of symptoms.

Histopathological examination after autopsy showed Negri bodies in brain parenchyma. Biological test was positive for rabies (brain of suckling mice was teeming with Negri bodies after first passage). His serum and CSF did not show antibodies against rabies. He had been in perfect health before the present illness and there was nothing to suggest an underlying immunocompromised state.

Discussion

The various vaccines available for active immunization against rabies are the brain tissue vaccine, duck embryo vaccine (DEV) and tissue culture vaccine (human diploid cell vaccine (HDCV) and PCEC rabies vaccine) [1]. Before the introduction of HDCV in 1974, post exposure prophylaxis was associated with a high failure rate [2]. The success of the treatment programmes with HDCV has been tremendous [3], and even the usefulness of concomitant RIG administration was put to doubt [4]. A case of fatal clinical rabies despite treatment from the first day with HDCV

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in absence of RIG therapy was then reported in 1982 to reinforce the need for later as part of rabies prophylaxis [5]. The credibility of HDCV being an effective tool for protecting man against rabies received further setback by documentation of failure of a seemingly adequate regimen of HDCV and RIG [6].

The incidence rate of human rabies in India is 28.8 cases per million population per annum and as many as 30,00,000 people receive post-exposure treatment per year [7]. Vast majority of these are with brain tissue vaccine (semple vaccine), the limitations of which include low immunogenicity, treatment failures and neurological complications. HDCV is potent and safe, but its high cost prohibits its use on a large scale in developing countries. PCEC rabies vaccine, another tissue culture vaccine, which costs almost one third the price of HDCV, seems to be an economical alternative. Clinical trials with this vaccine have shown that it possesses good immunogenicity and very low side effects [8,9].

The patient described in this report was treated with the prescribed schedule of PCEC rabies vaccine but without RIG. His CSF and serum tested negative for antibodies to rabies. Most studies using PCEC rabies vaccine have shown protective titres of neutralizing antibody on day 14. This fact raises a doubt that the vaccine was defective. However, the potency of the vaccine batch was confirmed on subsequent testing. The use of RIG along with

PCEC ensures early rise of the antibody titres to protective levels [10], and hence this combination would have provided more effective prophylactic treatment in this case.

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