

## A Vaccinated Case of Rabies

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IDU 660/2023. A ten year old school-boy from Tyauda, Kathmandu was admitted on 5th Shrawan, 2023 at 5.30 a.m. with continuous fever, pain in the throat and difficulty in swallowing and speaking for two days. There was no history of drug ingestion, cough and diarrhoea on direct questioning. The patient had been bitten at the left eye brow by a local dog 4 weeks ago. The dog was killed 4 days after the bite. Treatment with the phenolised anti rabies vaccine was initiated only on the 4th day of bite and altogether 12 injections were given to him.

On examination the boy with an average physique was fully conscious, irritable but not violent and could open the mouth fully: swelling of the cheeks with excessive salivation, hoarse voice, whitish coated tongue, soft palate not being paralysed, injected conjunctivae, pulse rate 120/min, temp. 99.4F, B.P. 100/70. The half an inch long healed area of the bite was neither numb nor hyperaesthetic. The examinations of cardio-vascular, respiratory and central nervous systems and also of the abdomen appeared clinically normal. In the next 5 hours of hospitalisation, the patient's condition deteriorated with marked salivation, difficulty in swallowing liquid, appearance of nasal regurgitation, getting violent at the pronouncement of water. But it appears queer to note that he could however be coaxed to swallow the coloured liquid medicine which provoked extreme restlessness with pain in the throat and choking sensation exemplifying the above features. Speech got worse and temperature rose to 101.4F. The excitement of the patient could only partially be controlled by intramuscular injections of 25 mg of largactil on two occasions. Further deterioration in the condition of the patient became manifest after 20 hours of admission with frequent attacks of excitement, very marked

salivation and increasing difficulty of respiration and speech defect which had by then become indistinct. The signs of encephalitis and bulbar palsy became more and more marked and the patient lapsed into coma to expire at the 22nd hour of admission

#### Discussion:

Rabies is a disease of all warm blooded animals specially of dogs. The virus is commonly excreted in the saliva and less commonly in the milk and urine; it is transmitted by biting and then spreading centrally to involve the brain and spinal cord via the axons of nerves or the perineural lymphatics. Bites on the head and face as happened in this case, than on the centrifugal areas and multiple, rather solitary bites are followed by the rapid onset of the disease.

Even after receiving 12 doses of the vaccine, the disease progressed relentlessly to manifest in its full fledged form and ultimately the boy succumbed to it. The failure of treatment could partially be ascribed to the severe nature of the disease coupled with the delay in the initiation of the vaccine and also the parents' inadvertent negligence to complete the course of 14 injections just because the child complained of severe pain at the inoculated site. Furthermore, no cauterisation of the bitten area was done by the fuming nitric acid. Considering the site of lesion and age factor the whole outlook of the disease could have been different if he, as advocated by W.H.O., was immediately immunised passively by 0.5 ml/kg. body wt. of hyperimmune serum or by 40 I.U.(= 40mgm) of gamma globulin per kg. body. wt before resorting to active immunisation by the available vaccine for ten days or preferably 14 days course. After hyperimmune serum inoculation passive antibody appears in the blood within one day and persists at a good level for at least 10 days; also that active antibody response to active immunisation is ordinarily seen by the 10th day after the first injection, although Wang San Pin noted the appearance of antibody after 2-3 weeks in his trial. To be effective the serum should be given within 48 hours of the wound. Moreover, it has been experimentally found by Nikolitsh et al that hyperimmune serum cannot neutralise all the virus at the sites of inoculation though considerable amount was neutralised in 48 hours. In animal experiments N.

Constantinesh et al found 0-18% cure rate in severe cases treated with antiserum and vaccine as compared to 0-10% with vaccine alone. It is very unfortunate to note that the serum is still rarity in this country.

It is a disease that can be prevented but cannot be treated with all the scientific knowledge available to us up-to-date. There is no record of a successfully treated case of rabies in the literature. If further menace to the society is to be prevented by the disease, it is imperative to have a well conceived plan with active participation and collaboration of the skilled workers from public health, clinical, veterinary and Nager Panchayat sides and those directly concerned with the wild animals that demands the complete destruction of animal reservoir particularly of stray and wild dogs and also that makes the compulsory provision to give 3ml of vaccine containing the living avirulent egg-adapted Flury strain of the rabies virus in the hind limb of every pet. The effective protection that the vaccine offers lasts for about 3 years. In this connection articles also have appeared in JNMA Vol 1 No 1 of 1963, Vol 3 No 2 of 1965 and Vol 4 No 3 of 1966. Till such a scheme is available, the following measures adopted by WHO in 1960 may be most rewarding:

- 1) For severe exposure in a non-immunised person, hyperimmune serum or gamma globulin followed by at least 10 injections of 2ml vaccine.

- 2) When the exposure is not severe or when the patient is first seen after seven days or more of the incident and no serum has been given, a course of 14 doses of vaccine.

- 3) If the patient has received the vaccine within 15 years, two doses of vaccine spaced 7 days apart. If the duration is longer than 15 years, a full course of 14 injections needed.

- 4) For prophylactic inoculation of those who are likely to be exposed in the future, 5 doses of vaccine preferably not containing nervous tissue at monthly intervals are advised with the booster doses spaced 1-2 years apart.

Last but not the least, it must not be forgotten that generally used phenolised anti rabies vaccine containing 4% suspension of the rabbit brain infected with the fixed virus has a serious disadvantage. The nervous

tissue that it contains may sensitise a few (1 in 4000 to 1 in 10,100) on being immunised and may later develop encephalitis. To do away with such 'neuro paralytic accidents', other vaccines like 'duck embryo vaccines' which do not contain nervous tissue have come into use.

**Summary** One of the fatal cases of rabies admitted to IDU has been described throwing some light on its recent prophylactic and therapeutic measures.

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