Case Report

Guillain-Barre Syndrome occurring after Rabies Vaccination

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Abstract

A variety of events are associated with the onset of Guillain-Barre syndrome, including vaccinations and vaccines. These are the swine influenza vaccine, oral poliovirus vaccine and rabies vaccine. Rabies is a uniformly fatal disease. It is preventable if World Health Organization (WHO) guidelines for post exposure treatment (PET) are followed. These include local treatment of wound, passive immunization with rabies immunoglobulins and administration of a efficacious vaccine. Cell culture vaccines are highly immunogenic with fewer side effects, but are costly. For that reason neurotissue vaccines are still widely used in Pakistan, although they are less immunogenic with higher incidence of neuroparalytic complications. We report a case of Guillain-Barre syndrome secondary to sheep brain anti-rabies vaccine in a young boy, who presented with lower limb weakness with total recovery after treatment.

Introduction

A variety of events are associated with Guillain-Barre syndrome, including vaccination. Inactivated nervous tissue anti-rabies vaccine has been reported to cause severe neuroparalytic complications. These vaccines are being widely used in Pakistan because of their lower cost, although these have significant side effects and are less immunogenic. Better alternatives like tissue culture vaccines are available, but expensive. We report a case of a young boy who developed severe lower limb weakness secondary to Guillain-Barre syndrome, three weeks after receiving eight doses of sheep brain anti-rabies vaccine.

Case Report

Fourteen year old boy presented to the accident and emergency department with eight days history of progressive difficulty in walking and weakness of lower limbs. For two days he had difficulty in passing urine and intermittent lower abdominal pain. He had no associated backache, headache or blurred vision. There was no history of recent respiratory tract infection or diarrhoeal illness. Past medical history was unremarkable. About one month prior to admission he had received post exposure prophylaxis for rabies with sheep brain vaccine.

On examination he was not distressed. Pluse was 102 beats per minute, blood pressure was 130/80mm of mercury, respiratory rate was 18 breaths per minute and was afebrile. There was no asymmetry of face and all the cranial nerves were intact. Fundoscopic examination was unremarkable. Motor system examination of lower limbs revealed grade 0/5 power below knee and 1/5 power of hip flexors and extensors. His legs were hypotonic and both knee and ankle jerks reflexes were absent. There was reduced joint position and vibration sense and hyperasthesia of soles. Examination of the upper limb was normal.

Cardiovascular and respiratory system examination was unremarkable. On examination of abdomen urinary bladder was palpable above the symphysis pubis.

Investigations revealed hemoglobin of 13 gm% with hematocrit of 43.4%; TLC was 6400/cmm and ESR was 23mm at first hour (Westergren method). Biochemical profile was normal and random blood sugar was 96mg%. Cerebrospinal fluid examination showed the fluid to be clear; proteins 2.3g/l, glucose 70mg%. Total leucocytes were 5µl.

Considering the diagnosis of Guillain-Barre syndrome, electrophysiological studies were performed which revealed demyelinating polyneuropathy consistent with Guillain-Barre syndrome. Patient was treated with four sessions of plasmapheresis with near complete recovery.

Discussion

Guillain-Barre syndrome is characterized by loss of reflexes and symmetric paralysis, usually beginning in the legs, with eventual nearly complete or complete clinical recovery in most cases.[1] It is mediated by an immune response that results in the direct destruction of either the myelin sheath surrounding the peripheral nerves or the

axon itself and it may or may not follow triggering events, including vaccinations.[2] Among the vaccines reported to be associated with the onset of Guillain-Barre syndrome are the swine influenza vaccine, oral poliovirus vaccine[3] and rabies vaccine.[4]

Reports of vaccine-associated Guillain-Barre syndrome are monitored by the Vaccine Adverse Event Reporting System (VAERS) of the Centers for Disease Control and Prevention (CDC) and the Food and Drug Administration and are defined as those with onset of Guillain-Barre syndrome within the six week period after vaccination.[5]

Rabbies is a uniformly fatal disease. It is preventable if World Health Organization (WHO) guidelines for post exposure treatment (PET) are followed. These include local treatment of wound, passive immunization with rabies immunoglobulins and administration of an efficacious vaccine.[6] The issue of post exposure treatment is very important, as in Pakistan sheep brain vaccine is still being used despite the fact that it has low immunogenicity and its efficacy is questionable.[7] In addition serious neuroparalytic complications may follow immunization with neurotissue vaccine, with a reported incidence of about 1:200.[8]

It is estimated that nearly 100,000 cases of dog bites and 5,000 deaths from rabies occur each year in Pakistan.[9] There are no known studies on the incidence of complications of rabies vaccine from Pakistan. Considering the huge burden of this problem, in Pakistan and the inaberrant use of sheep brain vaccine; it seems that the complications are either under diagnosed or unreported.

We could find a few case reports of Guillain-Barre syndrome following rabies vaccination from India.[10,11] The outcome of these cases was favourable as in our case but at the cost of prolonged hospital stay and the expense of plasmapheresis. It is therefore recommended that the use of nervous tissue vaccine must be condemned and the use of cell culture vaccines are encouraged.

References

1. Seneritne U. Guillain-Barre syndrome. Postgrad Med J 2000;76:774-82.
2. KoskiCL. Guillain-Barre syndrome and chronic inflammatory demyelinating polyneuropathy: pathogenesis and treatment. Semin Neurol 1994;14:123-30.
3. Chen R, Kent J, Rhodes P, Simon P, Schonberger L. Investigation of a possible association between influenza vaccination and Guillain-Barre syndrome in the United States, 1990-91. Post Mark Surveill 1992;6:5-6.
4. Hughes R, Rees J, Smeeton N, et al. Vaccines and Guillain-Barre syndrome. BMJ 1996;312:1475-6.
5. Chen RT, Rastogi SC, Mullen JRI. The Vaccine Adverse Event reporting System (VAERS). Vaccine 1994;12:542-50.
6. World Health Organization. WHO expert committee on rabies technical report series 824, 8th report. Geneva: WHO, 1992.
7. Naseem S. WHO recommendations on rabies post exposure treatment and correct technique of intradermal immunization against rabies. Infect Dis J Pak 2000;9:25-6.
8. Bahri F. Neurological complications in adults following rabies vaccine prepared from animal brains. Presse Med 1996;25:491-4.
9. Khan MH. The economics of prevention and control of rabies in Pakistan. J Coll Physicians Surg Pakistan 2002;12:389-90.
10. Udawat H, Chaudhary HR, Goyal RK, Chaudhary VK, Mathur R. Guillain-Barre syndrome following antirabies semple vaccine - a report of six cases. J Assoc Physicians India 2001;49:384-5.
11. Chakravarty A. Neurologic illness following post-exposure prophylaxis with purifiled chick embryo cell antirabies vaccine. J Assoc Physicians India 2001;49:927-8.