An unusual reaction to rabies vaccine

Jules W Maussen,[1] Nikki Blackwell,[1] Robert Norton[2]

This report describes a previously undescribed reaction to human diploid cell rabies vaccine (HDCV). The vaccine is available for prophylaxis against Australian bat lyssavirus (ABL) infection both prior to and after possible exposure. Australian bat lyssavirus is the most recent lyssavirus to be discovered and has been linked to at least one death in Queensland. HDCV appears to be effective against the virus.[1]

Case history

A 27-year-old man was scratched on the right shoulder on 22 March 1999 by an unidentified bat while he was at work on a construction site. He was assessed at his local hospital and, following consultation with the Public Health service, was given rabies immunoglobulin and one ampoule of HDCV. He was discharged and given instructions to return for further doses on days 3, 7, 14 and 28 following the first injection.

The vaccine administered to this patient was rabies strain Pitman-Moore/W 1381503-3M cultured on human diploid cells and inactivated by ß-propiolactone. Each injection contains 2.5 IU of the virus. It is indicated for prophylaxis against ABL both prior to and subsequent to potential exposure and is administered intramuscularly.

He presented to the Mt Isa Base Hospital for the day three injection. He reported that following the first injection, he had experienced transient neurological symptoms for 30–60 minutes. These included blurred vision and occipital numbness and resolved spontaneously. He was given the day three vaccine, observed for 90 minutes and discharged. Visual acuity following injection was recorded on this occasion and was 6/36 in both eyes.

He presented for the third injection on 31 March 1999 and reported the same symptoms following the second injection as those that occurred after the first. However, on this occasion, the symptoms had lasted for nearly 2 days.

Approximately 30 minutes after the third injection, he developed blurred vision, light-headedness and occipital numbness, as well as tingling over the left parieto-temporal region.

Examination revealed a thin, fully orientated young man with stable haemodynamic parameters and a GCS of 15. Visual acuity was 6/60 in both eyes, correctable to 6/36 with pinhole. He had a left horizontal nystagmus and a positive Romberg's sign. Gait, coordination and the remaining neurological and general examination were normal, as well as fundoscopy.

At this point, advice was sought from the regional Public Health Unit as well as from a clinical microbiologist. While the literature at that time had reported no permanent neurological deficits linked to the use of HDCV, opinions were divided as to whether treatment should be continued. It was felt that the patient was at low risk of Australian bat lyssavirus exposure.

The available information was discussed at some length with the patient, who elected to continue the course of injections after considering all the information presented to him. The same symptoms developed after each subsequent injection, lasting 3 days after the final injection. When contacted by phone 6 weeks later, the patient reported no residual symptoms and was discharged from further follow-up.

1. Mt Isa Base Hospital, Queensland

2. Townsville General Hospital, Queensland

Corresponding author: Dr N Blackwell, Mt Isa Base Hospital, PO Box 27, Mt Isa QLD 4825. Telephone: +61 7 4744 4427. Facsimile: +61 7 4749 4511. Email: Nikki_Blackwell@health.qld.gov.au.

Discussion

The Australian bat lyssavirus is known to infect at least five bat species in Australia, as well as humans. The bat species include all four species of flying fox (megachiropterans) and one species of insectivorous bat (microchiropterans).[1] The current public health guidelines make the assumption that all bat species can potentially carry the virus.[1]

HDCV was introduced over 20 years ago, following increasing concerns over the side effects of earlier vaccines. Vaccines prepared from neural tissue were associated with Guillain-Barré syndrome with an incidence of 1:1,600 to 1:32,000.[2] HDCV is associated with neurological complications in less than 1:150,000 cases. Four cases of neuroparalytic reactions have been reported worldwide, of which three exhibited features of Guillain-Barré.[3] Neurological complications to this vaccine are therefore very rare and no permanent effects have been reported to date.[4] It has been used in Australia since the 1996 death of a female patient in Queensland who developed encephalitis after a bat bite.[1]

The neurological symptoms exhibited by the 27-year-old male patient were unusual in that the neurology was not focal and its onset was rapid following injection. Whilst the signs and symptoms are suggestive of an ocular Guillain-Barré syndrome, the rapid onset and resolution of these suggests otherwise. Given the lack of urticaria, angio-oedema and pruritus, an immune-complex mediated cause was considered unlikely. The pathophysiology of this presentation, therefore, remains unclear. The patient's antibody status prior to the first injection was unknown.

The issue of whether to continue the course of injections presented an interesting ethical dilemma, given that exposure to ABL was unlikely. In this instance, informed consent was obtained from the patient, after he considered all the information available at that time. He was aware that the possible incubation period of the virus remains unknown and based his decision on his own assessment of the risks and benefits of the two options presented to him.

Conclusion

We believe the reaction to HDCV as occurred in this patient has not been reported before. We obtained accurate and up to date information from several sources and this allowed the patient to decide the next course of action. We note the vital importance of adequate information when managing unusual cases, as well as the importance of patient autonomy in the decision-making process.

References

1. Commonwealth of Australia, Public Health Division, Department of Health and Aged Care. Bat Lyssavirus information for medical practitioners. October, 1998.
2. Courrier A, Stenbach G, Simonnet P, Rumily P, Lopez D, Coquillat G, *et al*. Peripheral neuropathy following foetal bovine rabies vaccine. *Lancet* 1986;1:1273.
3. Mortiere MD, Falcone AL. An acute neurologic syndrome temporally associated with postexposure treatment of rabies. *Paediatrics* 1997;100: 720–721.
4. Dreesen DW. A global review of rabies vaccines for human use. *Vaccine* 1997;15 Suppl:S2–S6.