

Two Adverse Reaction Cases of Rabies Vaccination

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Abstract

Two adverse reaction cases of rabies vaccination were reported. The injection site in the buttock of a thirty-eight-year-man reddened and swelled one day after having given the second dose of rabies vaccine. He had a low-grade fever of 38°C, skin presented flushing locally, and conjunctivas swelled. However, the symptoms were controlled, and the conditions were improved after the combined treatment of dexamethasone, antibiotic and vitamins C of three days. The injection site in the buttock of a sixty-year-man reddened and swelled one day after having given the second dose of rabies vaccine. He had a low-grade fever of 37.2°C, and skin also presented locally flushing. Nevertheless, the man recovered fully after the combined treatment of dexamethasone, antihistamines, and vitamins C of three days.

Introduction

A vaccine, like any medicine, is capable of causing side effects or adverse reactions [USNLM 2009, CDC 2009]. Though rabies vaccines have improved greatly regarding safety in recent decades and may be safely used in all age groups, it could have some minor and short-lasting side effects [SAH 2016, Plotkin 2016, Wikipedia 2017]. Most of the adverse reactions to rabies vaccines occur at the injection site, particularly following intradermal administration of a booster [WHO 2010]. Nonetheless, the rate of the reported vaccine-induced adverse events is low [Zhou 2003, Fritsche 2010]. Vaccination against rabies virus could occasionally be associated with debilitating adverse effects [RCH 2017]. It has been known that the adverse reactions of rabies vaccination may be mild or local, systemic or severe [WHO 2012]. Local pain, redness, soreness, tenderness, erythema and swelling, itching, low-grade fever are the most frequently reported local or mild side effects [Lawrence 2005, Nicklas 2012, GC 2016]. The mild adverse reactions are rare [WHO 2012]. Systemic or moderate adverse reactions occur less frequent compared to local reactions, which may include fever, headache, pain in the joints, muscle aches, insomnia, dizziness, palpitations, diarrhea, vomiting, urticarial rashes, gastrointestinal symptoms, etc. [AIA 2006, WHO 2012, IAC 2017]. Severe adverse reactions include numbness, tingling, or burning pain in hands, arms, legs, or feet [PMH 2017], serious allergic reactions (i.e. difficulty breathing, hoarseness or wheezing, swelling of the throat, hives, paleness, a fast heart beat) [USNLM 2009, ECH 2016], neurological or neuroparalytic reactions (i.e. Guillain-Barré Syndrome, Meningo-encephalomyelitis, Mono-neuritis multiplex, Dorsolumbar transverse myelitis, Ascending paralysis of the Landry type), and others [USNLM 2009, CDC 2011, WHO 2012]. However, the severe adverse reactions are very or extremely rare [USNLM 2009, CDC 2009, CDC 2011].

Case Report

A thirty-eight-year-man who was bitten by a dog did not show any adverse reaction to receiving the first dose of rabies vaccine. However, the injection site in his buttock reddened and swelled one day after having given the second dose of rabies vaccine. He had a low-grade fever of 38°C, his skin presented flushing locally, and his conjunctivas swelled. The man received clinical therapy in Han Ting Hospital. His symptoms were controlled punctually, and his conditions were improved greatly after the combined treatment of dexamethasone, antibiotic and vitamins C of three days.

A sixty-year-man who was bitten by a dog did not present any side effect after the administration of the first booster of rabies vaccine. Nonetheless, the injection site in his buttock reddened and swelled one day after having given the second dose of rabies vaccine. He had a low-grade fever of 37.2°C, and his skin also presented

locally flushing. The man received drug therapy in Han Ting Hospital. He recovered fully after the combined treatment of dexamethasone, antihistamines, and vitamins C of three days.

Discussion

The similar symptoms of the two men revealed that they had mild adverse reactions after rabies vaccination of the second dose, which included local and mild allergic reactions [CDC 2011]. Nevertheless, the two side effect cases were rare in rabies vaccination [WHO 2012]. Research evidence shows that purified rabies immunoglobulin products could cause adverse reactions in 1-6% of vaccines [WHO 2017a]. It has been known that both of the two patients in the case report began to present adverse reactions after receiving the second shot of rabies vaccine instead of the first shot. A study shows that adverse reactions to rabies vaccination can occur or become more severe with repeated doses [PHE 2013]. Meanwhile, the two men had a respective fever of 37.2°C and 38°C, which were the same as the report of low-grade fever of 37 to 38 degrees Celsius for adverse events of rabies vaccination [SAH 2016]. Moreover, they only presented mild adverse reactions rather than systemic and severe side effects, as both of them were adults. It has been observed that children (≤ 5 years old) were more likely to suffer from side effects of rabies vaccination and more serious than the elder subjects because of their immature immune system, poor tolerance and emotional stress [Peng 2016]. Nevertheless, adults could also occur systemic or severe adverse reactions. A case report reveals that a man who received injections of rabies vaccine experienced transient neurological symptoms, which included blurred vision, light-headedness, and occipital numbness, as well as tingling over the left parieto-temporal region [ADH 2002]. Other case report shows that one patient immunized against rabies occurred acute bilateral renal pain and fever, and the rabies vaccination had to stop after the 3rd dose of vaccine [Lalosević 2009]. Furthermore, both of men in the case report only come out mild allergic reactions – local skin flush. Some of the studies show that hypersensitive reaction of rabies vaccination is rare, the overall incidence was 11 per 10,000 vaccines (0.11%) [Fishbein 1993], and serious anaphylactic reactions to the vaccine are estimated to occur at a rate of approximately 1 per million doses [Nicklas 2012].

It has been known that patients with adverse reactions to vaccination, including rabies vaccination, could be treated effectively, and their symptoms could be controlled and alleviated effectively [CDC 2011, WHO 2012, WHO 2017b]. Usually, such reactions can be successfully managed with anti-inflammatory and antipyretic agents, such as dexamethasone, paracetamol, ibuprofen or acetaminophen, diazepam, docusate sodium, fluoxetine [WHO 2015, IAC 2017, WHO 2017a, WHO 2017b]. Meanwhile, allergic reactions to rabies vaccines may be adequately or efficaciously administered with antihistamines, dexamethasone, epinephrine (adrenaline), hydrocortisone, loratadine, prednisolone [CDC 2011]. Therefore, the treatments for mild adverse reactions of the two men in the case report were appropriate, successful and effective. However, it is worth being mentioned that doctors, nurses and health practitioners in hospitals, clinics and health care agencies should be on the alert against related complications because the treatment of adverse reactions to rabies vaccination could cause other complications or adverse reactions. A case report reveals that an old lady, who was administered rabies vaccine and given post exposure anti-rabies prophylaxis treatment, came out hepatotoxicity [Rajegowda 2016]. Moreover, some of the beneficial treatment drugs for adverse reactions to rabies vaccination, such as dexamethasone, may significantly depress the virus-neutralizing antibody level, even when a full vaccination schedule is repeated [WHO 2017a, WHO 2017b].

Conclusion

There is no vaccine known that is completely free from all adverse reaction. However, vaccines differ specifically each other regarding the incidence and degree of adverse reaction. Moreover, although several adverse reactions are common to all vaccines, there also are some vaccine-specific adverse reaction [Plotkin 2016]. Though there are possible local or mild or systemic adverse reactions to rabies vaccination despite their rareness, once initiated, rabies prophylaxis should not be interrupted or discontinued, and do not contraindicate future doses [CDC 2011, Nicklas 2012], because if rabies vaccination is not completed, rabies is almost always

fatal and no treatment available once symptoms develop [WHO 2010, WHO 2013, GC 2016]. Furthermore, an adverse event following immunization is any untoward medical occurrence in a vaccine that follows immunization and does not necessarily have a causal relationship with the vaccine or the immunization process [BCCDC 2013]. Yet, rabies vaccination should be monitored appropriately, adverse reactions or events should be reported timely and reduced as far as possible [WHO 2010, CDC 2011]. Patients who have adverse reactions should be treated punctually, and symptoms should be controlled and alleviated effectively [WHO 2013, GC 2016].

Competing interests

All of the authors declare that they have no conflict of interests.

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