

Delayed Presentation with Anaphylactic Shock following Injection of Anti-Rabies Vaccine Post Exposure Prophylaxis (PEP) in a Patient: A Case Report

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ABSTRACT

Anaphylaxis is a potentially life-threatening allergic reaction. Virtually all vaccines have the potential to trigger anaphylaxis. There are cases reported with mild systemic reaction but anaphylactic shock after anti-rabies vaccination is rare. Side effects due to allergic reaction to vaccine antigen or the additives have been known for some time. Most of the cases are acute and only few with delayed hypersensitivity are shown to have cell mediated immune response. Once adverse effects occur immediate medical treatment and appropriate change of vaccine and vaccination schedule are of significance.

Keywords: anaphylaxis; rabies virus; immunization; delayed response.

INTRODUCTION

Anaphylaxis causes immune system to release a flood of chemicals that can cause the body with chain of symptoms leading in shock. IgE and IgG antibodies, immune effector cells and mediators contribute to this condition.¹ Since many conditions mimic symptoms of anaphylaxis accompanied by systemic manifestation like skin reactions these need to be considered in the differential diagnosis. Rabies can cause severe symptoms on human and 100% mortality if patient haven't received timely and adequate PEP. Modern rabies vaccines and immunoglobins is crucial method to prevent rabies virus infection.² Mild systemic reactions had been reported however severe Adverse effects (AEs) that had to stop or change the immunization were rarely reported.³

CASE REPORT

40 years old female was hospitalized for anaphylactic shock on 20th February, 2020 A.D. She reported an immunization history of 5th dose of rabies vaccine post exposure prophylaxis taken on same day around 11 am because of category II exposure to highly suspected dog's bite. On presentation to Emergency at 5:30 pm she complained of abdominal pain from 2 hours (around 4 hours of injection) in peri umbilical region. She also complained of two episodes of vomiting and loose stool. She had history of type 2 Diabetes Mellitus and had been taking medication for last 11 years. She does not give any family history of atopy. She also does not give any intake of drugs or food that was new to her.

Her blood pressure in the ER was 70/50mm of Hg, pulse 108 bpm, with respiration rate 26/min. She was afebrile and her saturation was 94% in room air. On systemic examination there was mild tenderness in peri umbilical region, bowel sound present. There were no significant findings in her chest. Her Hemoglobin was 17.8 gm%,

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Total count of 22,700/mm³ with neutrophil 80%, lymphocytes 17%, eosinophil 1% and monocyte 1%. Her random blood sugar was 334 mg/dl with platelet count of 2, 80,000/mm³. Serum amylase was 31. Urine R/E had 1-2 pus cells, with urine acetone negative.

Given her state she was managed in the Emergency with intravenous injection of hydrocortisone 200mg, inj adrenaline 0.2mg,

inj pheniramine 25mg iv stat, followed by inj adrenaline 0.3mg iv infusion in 500 ml normal saline and ringer's lactate 2 liters in total. After that her blood pressure gradually increased to 90/60 mm of Hg. On the next day she was provided with intravenous insulin, antibiotics, antihistamines and adrenaline nebulization. Her symptoms subsided and was discharged on the third day.

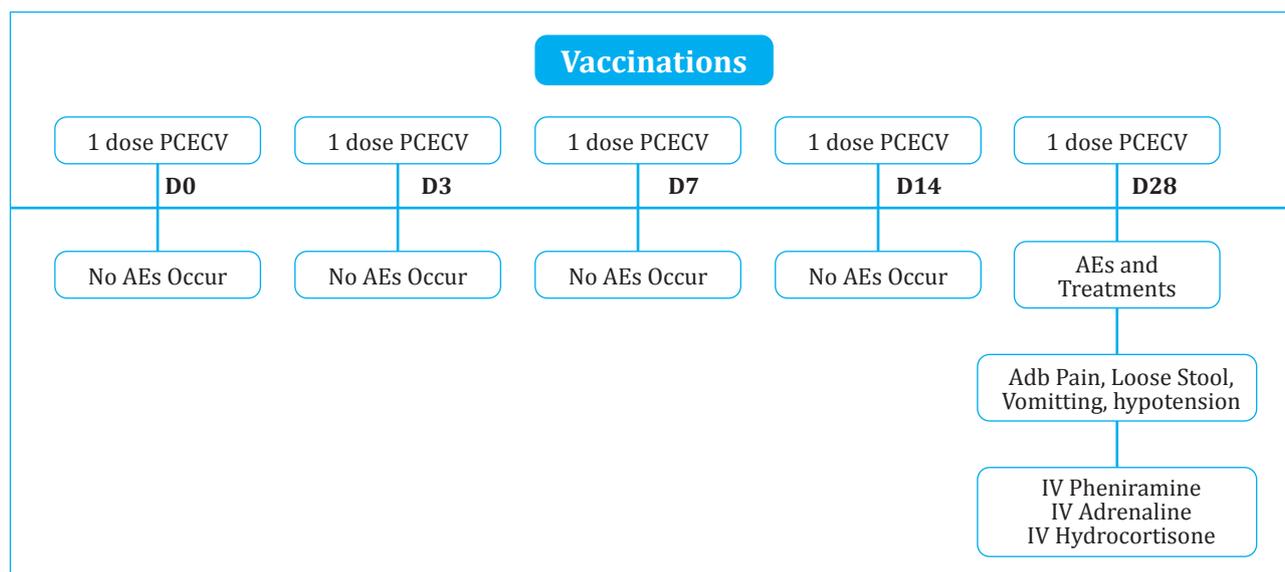


Figure 1. Vaccinations, AEs & Treatment on the patient

DISCUSSION

Mild systemic reaction such as headache, nausea, local pain, swelling, and myalgia had been reported in up to 31% of PCEV vaccine recipients and about 1 % in PVRV vaccine², severe allergic reaction like this case was rare. Most of the symptoms were transient and have been reported to arise after first or second dose of vaccination but in this case adverse effects were seen at the 5th dose which is very unlikely. Most common presentation are acute cutaneous manifestations reaching peak severity within 3-30 minutes. However 10-20% patients have no skin findings.⁴

The patient had presented with gastrointestinal symptoms and low blood pressure (decreased age-specific systolic blood pressure or a greater than 30% decrease from baseline; for adults, systolic blood pressure of less than 90 mm Hg

or greater than a 30% decrease from baseline)⁴ with no notable significant underlying cause. She had given history of immunization and, based on the information provisional diagnosis of anaphylactic reaction was made and treated accordingly. The symptoms were seen after few hours (around 4 hours) of injection thereafter delayed hypersensitivity was suspected.

Sometimes the reason behind anaphylaxis is not vaccine component (antigen) but other components like residual animal protein, antimicrobial agents, preservatives or stabilizers. Certain vaccine contain preservatives like thimerosal.⁵ In this case, patient was injected with lyophilized PCEVC containing thimerosal as preservative. Reaction to thiomersal have been described as local delayed type hypersensitivity reaction with only less reports of immediate reaction.⁶ In some patients with IgE-mediated

sensitization to carbohydrate moieties have shown to develop symptoms of anaphylaxis 3 to 6 hours after introduction of allergen.⁴ Recent finding regarding reaction mediated via the carbohydrate epitope galatose-alpha-1,3-galactose a constituent in animal gelatin has broadened the spectrum of gelatin related allergies,⁷ A 4 year old boy was reported on June 21,2014 in china for urticarial drug eruption. His parents had reported history of immunization with lyophilized PVRV vaccine on June 21. He had fever (38.9 C), weakness, headache within 8 hour after immunization. Later the cause to be identified as allergy due to gelatin, an animal protein.² Since allergen test was not done in this particular case, the exact cause of allergic response was not identified and no conclusive result can be given from this study.

Cutaneous manifestations of anaphylaxis are most common, with respiratory symptoms being the next most frequent.^{3,4} Neither of them were seen in the above case. Other rare presentation of anaphylaxis include nausea, vomiting, diarrhea, cramping, pain, tachycardia, hypotension, chest pain, cardiac arrest, metallic taste in mouth, uterine contraction, scrotal edema, dizziness, seizures, sense of impending doom.^{2,4} Since the symptoms show multisystem organ involvement sometimes diagnosis of anaphylaxis can be difficult with atypical presentation.

During the administration of rabies vaccine, serious systemic anaphylactic reaction is not common, and such reaction may cause dilemma for attending physician and patients. In such cases patients must be treated with epinephrine, antihistamine, steroids and intravenous fluids.² The risk of patient acquiring rabies must be considered carefully before deciding to discontinue the vaccine.⁵

In this case, it was challenging to identify the cause of the AEs and offer prompt medication.

This could remind clinicians of several points and in emergency one must be aware of this type of unusual presentation. When a person with history of serious hypersensitivity to rabies vaccine must be re vaccinated alternate vaccine types can be considered and antihistamines can be administered.² Epinephrine should be readily available to counter attack anaphylactic reaction and person should be observed immediately after vaccination to avoid imminent death due to shock.

CONSENT: Case Report Consent Form was signed by the patient

CONFLICT OF INTEREST: None

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