

Introduction

- Acute inflammatory demyelinating polyneuropathy (AIDP) is an autoimmune disorder characterized by rapid onset of muscle weakness.
- While it is often preceded by an infection, the immune response that damages the peripheral nerves has been linked to numerous causes.
- Intravenous immunoglobulin (IVIg) and plasmapheresis are first-line treatment options.
- Rarely, certain vaccinations have been associated with the development of AIDP, termed vaccine-mediated acute inflammatory demyelinating polyneuropathy (V-AIDP) .
- V-AIDP shares similarities with GBS, which is a more general term for immune-mediated polyneuropathies. Both conditions involve the immune system's attack on the peripheral nerves.
- Molecular mimicry is thought to be one proposed mechanism. It suggests that the immune response triggered by a vaccine, may cross-react with components of the peripheral nerves due to structural similarities between the pathogen and the nerve tissue (Figure 1)
- Electromyography (EMG) and nerve conduction studies can help confirm the diagnosis by showing evidence of demyelination in the peripheral nerves
- We present a patient who developed V-AIDP following a recent vaccination.

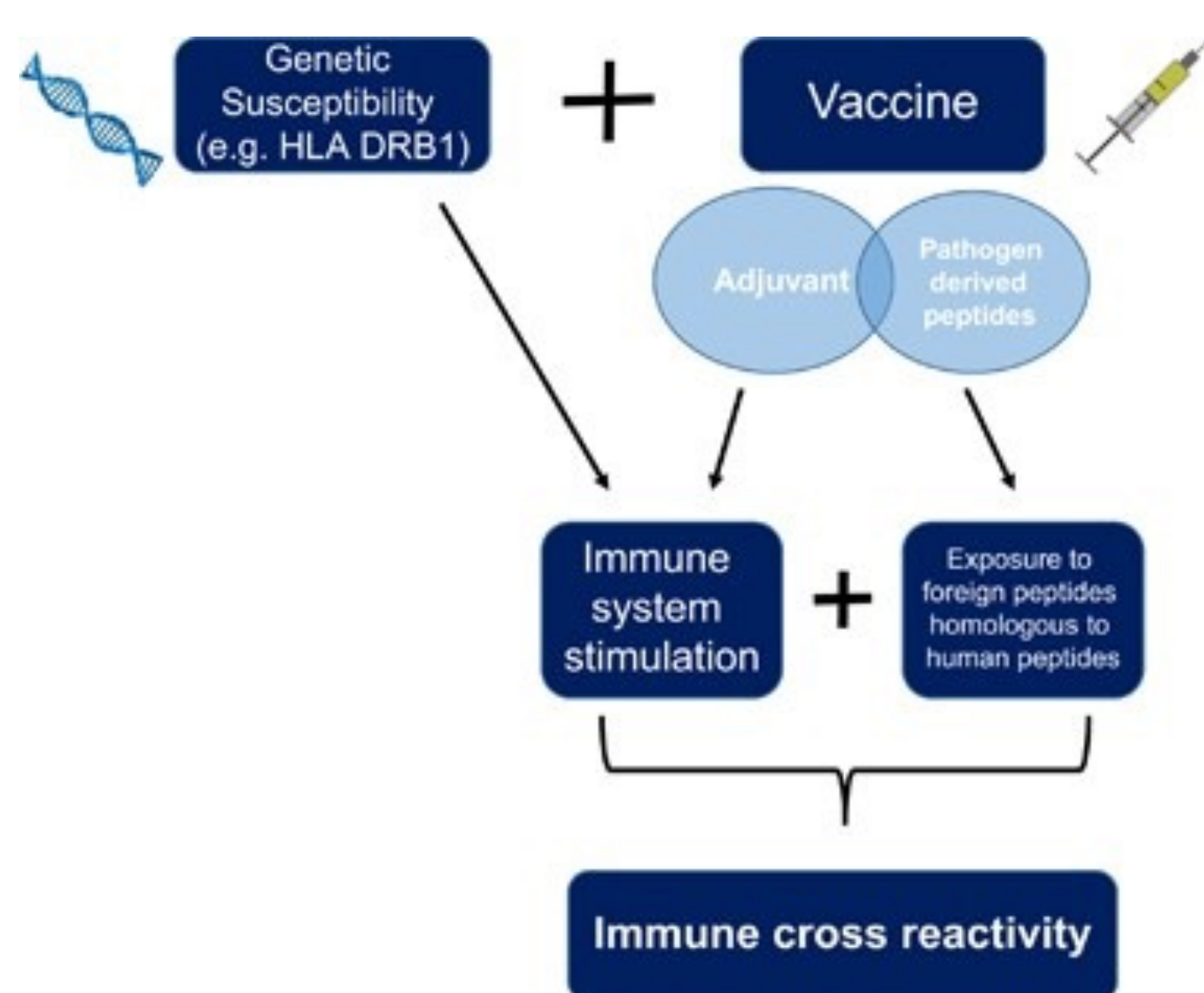


Figure 1. Molecular Mimicry
Structural similarities (between foreign antigens and proteins or antigens present on peripheral nerves) drive the immune response against nerve tissue

Case Presentation

- An 87-year-old Cantonese-speaking woman presented with third-degree burns following prolonged exposure to hot water.
- Initial management involved immediate burn wound care, fluid resuscitation, and appropriate pain control.
- It was initially difficult to obtain an extensive history due to the acute nature of the patient's burns and language barriers that were minimally resolved with interpreter services.
- Conversations with numerous family members revealed the burns to be a product of decreased sensation in the patient's lower extremities. Two weeks following influenza vaccination, the patient developed numbness in both legs.
- Over her hospital stay, the patient developed progressive ascending muscle weakness. She also experienced paresthesias, difficulty walking, and loss of deep tendon reflexes.
- Neurological examination revealed bilateral lower limb weakness, sensory deficits along lower extremities, and eventual development of areflexia.
- Given the temporal association between the vaccination and the onset of neurological symptoms, AIDP was suspected. Lumbar puncture was consistent with AIDP.
- Serum studies for common infectious triggers, including *Campylobacter jejuni* and cytomegalovirus, were negative.
- The patient was promptly started on intravenous immunoglobulin (IVIg) therapy at a dose of 0.4 g/kg per day for five days.
- Physical therapy and rehabilitation were initiated to optimize functional recovery
- Over the following weeks, the patient demonstrated gradual improvement in muscle strength and sensation.
- Serial nerve conduction studies showed evidence of remyelination, further supporting the diagnosis of AIDP.

Conclusion

This case highlights a potential association between vaccination and AIDP. While rare, vaccination can precipitate this autoimmune condition and prompt recognition can improve outcomes and prevent further disability.

Early diagnosis and prompt treatment with IVIg or plasmapheresis are essential to improve outcomes and promote recovery.

This case underscores the need for continued surveillance of vaccine-related adverse events to enhance patient safety and public health.

Clinicians should be aware of the potential rare adverse events associated with vaccinations, including vaccine-mediated acute inflammatory demyelinating polyneuropathy.

Vigilance in recognizing such complications and initiating appropriate management is critical to optimize patient outcomes and maintain public confidence in vaccination programs.

References

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