



INTRODUCTION

- Guillain Barre Syndrome (GBS) is a rare immune-mediated demyelinating polyneuropathy.
- Antecedent infections preceding GBS include Campylobacter diarrhea and respiratory illness (like influenza).
- Few cases reports have also Lyme disease as a potential antecedent infection.
- Other antecedent events linked to GBS include surgery and vaccination
- The influenza vaccine has been of particular interest because it is recommended annually for everyone above six months of age in the United States.
- Risk of post-vaccination GBS is currently estimated at 1-2 GBS cases per million vaccine administered.

CASE DESCRIPTION

- A 22-year-old female with no significant past medical history was admitted with a 5-day history of bilateral lower extremity weakness. She received influenza vaccination five weeks prior to the presentation . The patient progressed rapidly over days to quadriplegia and respiratory failure requiring intubation and mechanical ventilation.
- The cerebrospinal fluid analysis showed albumin-cytological dissociation, and nerve conduction studies revealed an acute inflammatory demyelinating polyneuropathy. GBS was diagnosed, and she was treated with intravenous immunoglobulin and later had plasmapheresis sessions following minimal recovery.
- IgM Western blot for Lyme disease was positive, but the CSF Lyme PCR was negative., but the CSF Lyme PCR was negative for which she was started on Ceftriaxone. She made a gradual recovery over the next ten weeks to a near full functional status.
- Her question was, "What caused my GBS?".

CONCLUSION

- In our patient, since the CSF Lyme PCR was negative, Neuroborreliosis was unlikely though antecedent Lyme disease leading to GBS could not be ruled out. She likely had post-influenza vaccination GBS.
- However, the Influenza illness is more likely to be complicated by GBS than the flu vaccine. Vaccination by reducing influenza infection and hospitalization may indirectly lower the rate of GBS, therefore withholding vaccination in GBS patients may be counter-productive, especially in high-risk individuals and health-care workers.
- The decision to withhold the influenza vaccine based on post-vaccination GBS should be weighed against the risk-benefit of severe influenza infection and its complications, especially in high-risk individuals .
- More studies are needed to assess the role of vaccination in former GBS patients.

DISCUSSION

- GBS is the most common cause of acute flaccid paralysis in the United States.
- Two thirds of cases are preceded by Campylobacter jejuni gastroenteritis or respiratory illness (like influenza, cytomegalovirus, EBV, and mycoplasma pneumoniae)¹. Also Lyme disease, has been implicated as a potential antecedent infection^{2,3}. Neuroborreliosis, a neurological manifestation of Lyme disease can present with flaccid paralysis⁴. In Lyme disease-endemic areas, 5-20% of healthy adults may have a positive serology .However, definite Lyme neuroborreliosis is diagnosed by establishing CSF positive for Borelia specific antibody (IgM or IgG) or positive culture or PCR in CSF.
- Post-vaccination GBS is defined by the occurrence of GBS within six weeks of vaccination. Influenza, polio, meningococcal, rabies, and pneumococcal vaccines have been associated with post-vaccination GBS^{5,6}. The risk of post-vaccination GBS after influenza vaccination is 1-2 cases/ million administered vaccine versus 17.2 cases/ million post-influenza cases.
- The association of GBS with influenza vaccine originated with the 1976 swine flu outbreak in which in an effort avert a potential pandemic, a mass-vaccination campaign was started. Significant rise in reported post-vaccination GBS cases eventually contributed to the premature termination of the vaccination campaign. In 2003, The National Academy of Medicine found a significantly increased risk of GBS at 1 case per 100,000 swine flu vaccinated individuals during the 1976 campaign.
- However, Influenza vaccination may have an indirect protective effect against GBS. A study reviewing hospital admissions between the years 2000-2009 found a significant positive correlation between influenza hospitalizations and GBS hospitalizations. Noteworthy, increased vaccine coverage did not lead to increased GBS hospitalizations⁷. Therefore, controlling influenza infections through a robust vaccine programs may indirectly lower GBS.
- The Advisory Committee on immunization practices (ACIP) recommends avoidance of flu vaccine in patients not at high risk for severe influenza complications that developed GBS within six weeks of previous vaccination. Recurrent GBS occurs in 1-6% of cases. A small Dutch study with 106 post-vaccination GBS patients who received flu vaccine subsequently did not report GBS recurrence⁸. More studies are needed to assess the full benefits versus risks.

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