Recurrence of Guillain-Barré Syndrome Following Vaccination

**Abstract**

**Background:** Guillain-Barré syndrome (GBS) is an autoimmune disorder. GBS has been reported following vaccines. The current CDC recommendation is to avoid vaccinating individuals who have had a history of GBS within six weeks of a prior influenza vaccination if they are not at high risk of severe complications from influenza illness.  

**Methods:** We identified GBS cases from the Kaiser Permanente Northern California (KPNC) databases from 1994 through 2008, using hospital discharge summary diagnoses. A neurologist reviewed each medical record was neurologist-reviewed and only confirmed GBS cases were included for follow up. We followed confirmed cases through 2008 for vaccinations and recurrent GBS. To distinguish recurrent GBS from Chronic Inflammatory Demyelinating Polyneuropathy (CIDP), we defined recurrent GBS as 1. a single episode of acute monophasic neuropahty with near complete recovery between acute episodes.  

**Results:** We identified 550 neurologist-confirmed individual cases of GBS over 33 million person years. During the follow-up period, 989 vaccines were given to 279 of these individuals after the diagnosis of GBS. 405 TIV vaccines were administered to 107 individuals with a prior diagnosis of GBS. 18 of the initial 550 cases of GBS had onset within 6 weeks of TIV; of these, 2 were revaccinated with influenza vaccines and these 2 did not experience a recurrence of GBS. Only 6 individuals had a second (recurrent) diagnosis of GBS. Among these 6 individuals, only 1 had any vaccine exposure at all in the year prior to the 2nd onset of GBS. This was a single dose of MMR 4 months prior to the onset of the 2nd episode of GBS.  

**Conclusions:** In our population of over 3 million members, over an 11 year period, risk of GBS recurrence was low (6/550 = 1.1%). There were no cases of recurrent GBS after influenza vaccination, and none within an accepted risk interval after any vaccine. There were too few GBS cases following influenza vaccines to draw conclusions about revaccinating those whose GBS occurs within 6 weeks of TIV.

**Objective**

To retrospectively identify persons in our system with a history of GBS, follow hospital admissions and vaccines for as long as possible, and determine whether they are at higher risk of relapse of GBS after re-vaccination.

**Methods**

**Study Population:** Identified from the Kaiser Permanente Northern California (KPNC) databases.  

**Conclusions:** In our population of over 3 million members, over an 11 year period, risk of GBS recurrence was low (6/550 = 1.1%). There were no cases of recurrent GBS after influenza vaccination, and none within an accepted risk interval after any vaccine. There were too few GBS cases following influenza vaccines to draw conclusions about revaccinating those whose GBS occurs within 6 weeks of TIV.

**Results (continued)**

**Recurrence of GBS**  
After chart and neurologist review, 6 individuals (1.1% of the group of 550) were confirmed as having recurrent GBS.  

- The calculated rate of recurrence of GBS was 1.5 per 10,000 person years (95% Poisson CI 0.6 – 3.3). Table 2 shows characteristic patients and time to recurrence for the recurrent cases.

<table>
<thead>
<tr>
<th>Case</th>
<th>Age at 1st GBS</th>
<th>Age at 2nd GBS</th>
<th>Sex</th>
<th>Years to Recurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>25</td>
<td>35</td>
<td>M</td>
<td>11.0</td>
</tr>
<tr>
<td>2</td>
<td>43</td>
<td>45</td>
<td>F</td>
<td>1.8</td>
</tr>
<tr>
<td>3</td>
<td>66</td>
<td>79</td>
<td>M</td>
<td>13.3</td>
</tr>
<tr>
<td>4</td>
<td>26</td>
<td>66</td>
<td>F</td>
<td>40.0</td>
</tr>
<tr>
<td>5</td>
<td>28</td>
<td>31</td>
<td>F</td>
<td>2.0</td>
</tr>
<tr>
<td>6</td>
<td>52</td>
<td>71</td>
<td>F</td>
<td>11.1</td>
</tr>
</tbody>
</table>

**Summary**

We followed 550 cases of confirmed GBS over many years, and found 6 episodes of recurrence. None of these recurrences were temporally related to receipt of influenza vaccines vs. 105 of 532 (20%) of the those who developed GBS not in relation to TIV, but the difference was not significant (p=0.6 by Fisher exact test).

- None of the 18 GBS cases which originally followed TIV, including the 2 with subsequent TIV administration, had a recurrence of GBS.  
- None of the GBS cases followed receipt of live intranasal influenza vaccine.  
- Among the 107 individuals with a previous diagnosis of GBS who received a total of 405 doses of TIV, there were no cases of recurrent GBS during the year following TIV (95% binomial CI 0.0-31 per 100 doses).

**Conclusions**

With over 30 million person-years of follow up, we found that recurrent GBS is relatively rare. We found no evidence that vaccination is associated with recurrent GBS.

- We did not observe any recurrent GBS in the 18 GBS cases which initially occurred within 6 weeks following receipt of influenza vaccine.  
- We did not have enough power to evaluate an association of repeat influenza vaccination and recurrent GBS.