
**Significant potentiation of anticoagulation by flu-vaccine during the season 2001-2002**

Influenza-vaccination is increasingly used in patients under chronic anticoagulation. Whether it interferes with oral anticoagulants is under debate. We found, in a case-control study in ninety patients in the 2001-2002 season, that flu-vaccination produced a significant increase in INR, particularly in a subgroup of patients. INR should be carefully monitored in anticoagulated patients after flu vaccination.

### Table 1. Characteristics of cases (vaccinated patients) and controls (not vaccinated patients).

<table>
<thead>
<tr>
<th></th>
<th>Cases</th>
<th>Controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (mean)</td>
<td>74</td>
<td>69</td>
</tr>
<tr>
<td>Sex (M/F)</td>
<td>58/32</td>
<td>30/15</td>
</tr>
<tr>
<td>Low range INR 2-3 (N)</td>
<td>69</td>
<td>37</td>
</tr>
<tr>
<td>High range INR 3-4.5 (N)</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>Warfarin/Acenocoumarol (W/A)</td>
<td>88/2</td>
<td>44/1</td>
</tr>
<tr>
<td>Major bleeding complications (N)</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Minor bleeding complications (N)</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Thrombotic complications (N)</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Figure 1. Effect of flu vaccination on INR in patients under long-term oral anticoagulation. INRs were recorded three times before (the last of which 5-7 days prior to) and one time (7-10 days) after vaccination in the cases and at the same time points in the controls. Data are expresses as means±SD.
* *p<0.00005; °p<0.00001.
the 1982–1983 vaccine season was not seen in the following vaccine season, suggesting possible differences depending on vaccine batches. Unfortunately, in our study the information concerning the type of flu vaccine administered was not available. Our data, from the largest controlled series so far reported, support the existence of a potentially serious interaction between warfarin and flu vaccine, which might be due to inactivation of the cytochrome p450 system. This implies that INR values should be monitored carefully in anticoagulated patients in the immediate period following flu vaccination.

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**References**