Validity of Self-Reported Penicillin Allergies in a Community Population

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BACKGROUND
About 10% of people claim to have a penicillin allergy. Most people with negative skin tests can tolerate oral doses of penicillin. Verifying a penicillin allergy is important because if patients can tolerate oral doses of penicillin, we can reduce patient exposure to other broad spectrum and more expensive antibiotics.

OBJECTIVE
To report the validity of self-reported penicillin allergies in patients presenting to an allergy clinic in Windsor.

METHODS
Retrospective chart review of 284 patients who presented to an allergy clinic for penicillin allergy testing from April 2011 to December 2014.

RESULTS

<table>
<thead>
<tr>
<th>Immediate reactions</th>
<th>Delayed reactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test performed to Allergen</td>
<td>Positive skin/intradermal</td>
</tr>
<tr>
<td>Immediate reaction</td>
<td>1.8%</td>
</tr>
<tr>
<td>Delayed reaction</td>
<td>2.1%</td>
</tr>
</tbody>
</table>

8.1% (23 of 284) of self-reported penicillin allergies reacted positively to allergy testing.
1.8% (5 of 284) of patients reacted within 24 hours of ingestion of the first dose of oral challenge.
4.2% (12 of 284) of patients had a delayed reaction with a rash occurring 24 hours after first dose of oral amoxicillin.

There were 6 reactions (of 284) to skin and intradermal testing, whereby oral challenge was then not performed.
Of the oral challenges, the reactions included 7 with hives, 12 with rash, and none with any cardiopulmonary compromise. This means there were no life-threatening reactions.

PATHOPHYSIOLOGY
2 presentations of penicillin allergic reactions explored: immediate hypersensitivity reactions and delayed hypersensitivity reactions.

<table>
<thead>
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<th>Immediate reactions</th>
<th>Delayed reactions</th>
</tr>
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<tbody>
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<td>Immediate reactions are IgE-antibody mediated and involve the release of histamine and other mediators.</td>
<td>Delayed reactions are T-cell mediated, rather than through antibodies.</td>
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<tr>
<td>Reactions often occur within 6 hours of ingestion of penicillin, although it has also been documented within 24 hours of ingestion.</td>
<td>Reactions often occur &gt;24 hours after ingestion of penicillin.</td>
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<tr>
<td>Reactions often manifest as skin hives or systemic reactions including anaphylaxis.</td>
<td>Reactions often manifest as a maculopapular rash on the skin.</td>
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CLINICAL IMPLICATIONS

- Many clinical situations require penicillin as a first-line treatment.
- A proper penicillin allergy assessment can reduce patient morbidity associated with the use of other antibiotics.
- Other antibiotics increase hospital stay and antibiotic-resistant infections.
- This may help reduce overall healthcare costs in our community.

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