

Management of allergy to penicillins and other beta-lactams

Up to 20% of drug-related anaphylaxis deaths in Europe and up to 75% in US caused by penicillin. Penicillin is estimated to cause between 0.7% and 10% of all cases of anaphylaxis

1-10% of self-reported allergies have evidence type 1 hypersensitivity on testing. Being labeled as penicillin allergic leads to longer hospital stays, greater resistance and greater costs. Anaphylaxis is rare but risk factors include age (20-49), female sex, concurrent infection and a past reaction (lower risk if last reaction >15 years old) and not atopy or family history. Repeated courses of penicillin are more sensitizing than a single dose.

Good history should include details of the drug, time of onset and resolution of symptoms.

Clinical presentation is variable and depends on the immunological mechanism. Immediate – Ig E mediated reactions occur up to 6 hours but are usually less than one hour after the last drug administration, can occur up to 4 days into the course and can lead to anaphylaxis, urticarial, angioedema, wheezing and laryngeal oedema.

Non – Immediate reactions – Non IgE and occur 60min to several days after last administration.

Cytotoxic reactions leading to blood disorders, immune complex reactions leading to serum sickness 3-4 weeks after treatment commences and T cell mediated delayed reactions leading to rashes.

Maculopapular rashes occur in up to 10% of patients exposed to aminopenicillins esp. if viral infection and in 70-90% of those infected with EBV or HPV viruses. Overall rate of cephalosporins is 10 times lower than penicillin. Bullous exanthems such as Steven Johnson syndrome can occur and re-administration must be avoided.

Reasons to investigate further via a drug allergy clinic include being labeled with multiple drug allergies, patients requiring multiple courses of antibiotics those (CF, diabetes, bronchiectasis, immunodeficiencies), when there is no alternative

antibiotic and anaphylaxis under general anaesthesia when multiple drugs are administered concurrently.

Investigations must be undertaken in an experienced hospital setting and include skin testing including skin pricks, intradermal injections and occasionally patch testing. Tests are performed to penicillin, amoxicillin and the index drug.

A third of penicillin allergic patients have negative skin tests. Therefore, patients also undergo a graduated challenge to the drug if deemed safe.

Available IgE blood tests to beta-lactams are not sensitive and should only be used in specific circumstances in specialist settings.

Cross-reactivity occurs in up to 10% of penicillin allergic patients for first generation cephalosporins but in 2-3% of third generation cephalosporins. Approximately 2% of cephalosporin sensitive patients react to penicillins. Cross-reactivity is less frequent in non-immediate reactions.

The current advice is to avoid all penicillins and cephalosporins if there is a clear history of an allergic reaction.

An alert-bracelet should be recommended to the patient, and the allergy centre should indicate the words to be inscribed. In addition, a drug allergy alert must be added to the patient's records.