Penicillin allergy on the acute take

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Case history 1

- 80 year old male
- Admission with falls; diagnosed with pneumonia
- Known to be penicillin allergic
  - Wearing red wrist band to that effect
- Prescribed benzyl penicillin by junior doctor; first dose administered by senior member of nursing staff
- Immediate onset of allergic symptoms
- Died 3 days later
- Yellow post-it over the Allergy section (where allergy documented) on the drug chart – section not checked by either prescriber or nurses who checked drugs
Case history 2

• 61 year old admitted from care home
• History of 2 previous episodes of anaphylaxis due to penicillin
• Penicillin allergy documented extensively
  • Red wrist band, A&E notes, ambulance notes, nursing home notes, EAU notes
• Augmentin indicated; junior member of team contacted care home - no knowledge of antibiotic allergy. Concluded that couldn’t be a significant problem
• IV coamoxiclav administered resulting in fatal anaphylaxis
Drug allergy

- **Immediate rapid onset** - within 60 minutes of exposure
  - Anaphylaxis
  - Urticaria/angioedema

- **Non-immediate without systemic involvement** – onset within 6-10 days of first exposure; accelerated with re-exposure
  - Macular papular rash
  - Fixed drug eruption

- **Non-immediate with systemic involvement** – onset 2-6 weeks after first exposure; 24-48 hours after re-exposure
  - DRESS – drug rash with eosinophilia and systemic symptoms
  - Toxic epidermal necrolysis (TEN), Stevens Johnson Syndrome
Beta lactam antibiotics

- **Aztreonam**
- **Imipenem**
- **Meropenem**

**Structures:**
- Penicillin
- Cephalosporin
- Carbapenem
- Monobactam
Assessing the patient who reports penicillin allergy
First ask yourself ‘do I need to prescribe a penicillin?’

- You will need to undertake a risk assessment
  - If the answer is YES
  - If the answer is MAYBE /”I would really like to”

- If the answer is NO
  - give the alternative and
  - consider referral for allergy specialist evaluation particularly if patient has
    - Other drug hypersensitivities
    - A condition where recurrent infective episodes are predicted
Making the risk assessment

DO YOU FEEL LUCKY.... PUNK?

WELL.... DO YA?
Risk assessment has to be on a case by case basis: consider

- **Patient-related factors**
  - History of previous reactions – how much does this sound like allergy?
  - Severity of condition – how important is it that they have the most effective treatment asap?
  - Hypersensitivity to alternatives – what exactly are my choices?

- **Disease-related factors**
  - Putative diagnosis
  - Culture results
  - Efficacy of alternatives
Assessing patient history

- Ask about previous reactions;
  - when
  - nature of symptoms
  - after which penicillin

- Ask about other subsequent antibiotic use

- Gut symptoms in isolation make allergy less likely (but do not exclude it)

- The onset of symptoms whilst the patient is taking the drug makes it more likely to be responsible
DRESS

• DRESS - Drug reaction with eosinophilia and systemic symptoms
• 10% mortality – due to hepatitis
• Allopurinol, anti-epileptics, antibiotics

• Eosinophilia associated with
  • Fever
  • Rash
  • Lymphadenopathy
  • Liver dysfunction
  • Thrombocytopenia

• Drug should not be re-administered – accelerated and amplified response within 48 hours
Stevens-Johnson syndrome
(toxic epidermal necrolysis)

• Starts within a few days of using drug
• Fever, itch, conjunctivitis and pharyngitis (due to mucosal involvement) usually precede blistering
• Mortality 30%
• > 100 drugs implicated – particularly antibiotics and anti epileptics
• Drug should not be re-administered
Stevens-Johnson syndrome
Prescribing cephalosporins where there is a history of penicillin allergy

- Original cross reactivity rates may reflect contamination of early cephalosporins with penicillins – reported to be as high as 7%; lower in newer generation cephalosporins

- Anaphylaxis rate with cephalosporins considered to be low: 0.0001%-0.1% prescribed courses; anaphylaxis rate with penicillins 0.05% prescribed courses

- Patients with fatal anaphylaxis with cephalosporins more likely to have history of penicillin allergy
• Indiscriminate administration cannot be recommended especially for patients with (history of) life threatening reactions

• May be attractive if allergy to penicillin is mild, indications for use of that drug is strong, skin testing impracticable, treatment for reaction readily available

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Clinical benefit vs clinical risk
Cross reactivity with other beta lactams

- Carbapenems (e.g. imipenem) and monobactams (e.g. aztreonam) share beta lactam structure but clinical cross reactivity is low

- Romano NEJM 2006 – prospective study
  - 112 patients with history of reactions to penicillins
  - SPT with imipenem – 1/112 positive
  - 110/111 negative SPT patients underwent graded IM challenge without reactions
Always ask about and document drug allergy

- Either document
  - All reactions offered by patient (or their GP, previous clinical notes etc)
  - ‘None known’
  - ‘Unable to ascertain’

- Ensure that this information is communicated effectively and particularly to the next drug chart and in the discharge letter
If you see someone with a suspected drug reaction

- Identify and clearly document
  - List of current drugs
  - Number of doses taken before onset of symptoms
  - Previous courses of same drug (if non-continuous)
  - Description of the reaction (NOT JUST ‘RASH’)
  - Consider DRESS...
    - *Eosinophilia* (think beyond Hb, WCC and platelets)
    - *Systemic symptoms*: Mucosal involvement? Fever? Deranged LFTs?
Any questions?
Learning Points

- Drugs
- Allergies

- Patient factors
- Disease factors

- Ask patient
- Check wristband
- Check drug chart

- Is it really necessary?
- Do a risk assessment

Admission

Before prescription

Risk assessment

If considering Penicillin

Before prescription

If considering Penicillin

Risk assessment

Admission