

The use of intradermal test in the diagnosis of non-immediate reactions to penicillins.

Sara Fransson; Holger F. Mosbech, Mogens Kappel, Jesper Elberling, Lene H. Garvey
Allergy Clinic, Department of Dermatology and Allergy, Herlev and Gentofte Hospital, University of
Copenhagen, Denmark.

Introduction:

Penicillins are the most common cause of drug allergy and recently it has been shown that non-immediate reactions (NIR) to penicillins are more common than first thought. Studies have shown that a prolonged provocation over several days is useful for diagnosing NIR, especially for aminopenicillins. However, in some patients prolonged provocation induces unpleasant maculopapular skin reactions lasting days to weeks and it would be useful if these patients could reliably be diagnosed with less invasive methods. The diagnostic value of intradermal test (IDT) with delayed reading for NIR is discussed in the literature, but no studies have compared the results of IDT with delayed reading with the gold standard drug provocation test. This aim of this study was to investigate the diagnostic value of delayed reading of intradermal test among patients with a drug provocation confirmed non-immediate allergy to penicillins.

Methods:

The study was performed at the Allergy Clinic, Gentofte Hospital, from February 2014 to July 2014. Provocation positive patients were identified and invited to participate if the drug provocation test (DPT) was performed with phenoxymethylpenicillin V (PCV), dicloxacillin (DIC), ampicillin (AMP), or amoxicillin (AMX) and the reaction developed > two hours after first full dose. The control group included patients with a negative DPT with one of the four penicillins.

Skin prick test (SPT) and intradermal test (IDT) were performed with PCV, DIC, AMP and AMX as well as a negative and positive control. Tests were read 20 minutes later for immediate reactions and the following days at home for NIR. Patients were told to contact the clinic if a reaction developed. A positive delayed IDT was defined as a reaction with localised erythema and induration usually lasting more than 3 days and appearing after an initial symptom-free period.

Results:

170 provocation positive were invited to participate; 79% responded, and 57 (34%) accepted to have an IDT (median age: 55 yrs. (range 18-77), 88% females). The control group included 18 patients (median age: 47 yrs. (range 34-71), 33% females).

Of the 57 DPT positive patients who participated 14 (25%) had a positive IDT and 43 (75%) had a negative IDT. No SPT or IDT were positive on immediate reading. All 18 controls had negative SPT and IDT with all drugs. Provocation had been positive for AX (n=13), AMP (n=12) PCV (n=2) DIC (n=4). The positive IDT matched the culprit drug for 11 (79%) patients and 86% reacted to more than one drug, mostly both aminopenicillins. Among the patients with a positive IDT, 9/14 (64%) vs 11/43 (26%) in the IDT negative group (p: 0.01) required oral steroids to treat the reaction induced by the DPT, reflecting a difference in the severity of reactions.

Conclusion:

Using IDT with delayed reading routinely as a part of the investigation algorithm would have spared one in four patients from developing an often unpleasant maculopapular rash after prolonged drug provocation test. Amoxicillin and ampicillin were the most common culprits matching reports in the literature. For patients testing negative on IDT it would be useful to identify risk factors from the clinical history such as length of delay in symptom onset, duration of rash, treatment needed e.g. need for oral steroids and treatment response, which might predict risk of a positive provocation. Further studies are needed to identify such risk factors.