Determination of Specific IgE Antibodies to Benzylpenicillin and Amoxicillin in Sera from Patients Allergic to Beta-Lactams

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IgE-positive sera from a group of allergic patients to penicillins were studied. RAST was made in parallel in each sera to benzylpenicillin (BP) and amoxicillin (AX). Values over an established coefficient of variation were considered as different. Sixty-six percent of the sera were more positive to BP, 25% more positive to AX and in 8.3% the RAST value was similar. There were cases with RAST positive to just one of the haptens. RAST inhibition studies showed that in most cases IgE antibodies recognized mainly the BP or AX conjugate and cross-reacted with the other.

The cause of cross-reactivity between penicillins has been attributed to their common chemical structure. However, some authors have found that the cross-reactivity is related to the chemical structure of the side chain [1]. This may have clinical relevance since cases of anaphylaxis to AX with good tolerance to BP have been reported [2]. In order to assess the role of the side chain in determining the specificity of IgE antibodies, a group of sera belonging to patients allergic to different penicillins was studied. RAST was made in parallel to BP and AX. A difference in value greater than 15% was established as different. According to these criteria, 16 sera proved to be more positive to BP, 6 to AX and in 2 the RAST was similar. Concentration effect curves and RAST inhibition studies using pools and individual sera more positive to either BP or AX indicated that BP or AX inhibited more than the other hapten when sera more positive to either AX or BP were used. These studies indicate that differences in RAST value to the two penicillins

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used are related to the chemical structure of the side chain. Individual sera seem to be primary specific to one hapten and cross-react with the other. These data have clinical relevance. It has been reported that the addition of semisynthetic penicillins for skin testing will improve the diagnostic efficiency of the in vivo tests [3]. In a study made by our group, the addition of AX for skin testing, RAST and challenge detected that of 62 cases evaluated as allergic to penicillin,

22 reacted only to AX and tolerated BP [4]. These results give important evidence of the role of the side chain in the specificity of the IgE antibodies involved in allergy to penicillins.

References

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