Role of Pencillin Binding Proteins in Pencillin Allergy

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Abstract

All β-lactam sensitive bacteria contain enzymatic pencillin binding proteins (PBPs), which are membrane-bound enzymes and targets of β-lactam antibiotics. In this work evaluation of the significance of PBPs in immune response to benzylpenicillin was presented. 35 patients with allergic reactions to penicillin and 17 subjects without penicillin allergy, but exposed, were studied. Proliferative T-cell responses to benzylpenicillin, penicillin and PBPs conjugates (Pc-PBPs) from E. coli, K. oxytoca, S. aureus, S. epidermidis or serum protein (Pc-S) were measured. Although each allergic individual responds to Pc-PBPs in several different ways, specific proliferation of T lymphocytes with Pc-PBPs from bacterial membranes was significant higher than with Pc or Pc-S. This observation gives us a real insight into the causes of the drug allergy: individual allergic reaction and susceptibility to the drug is in strict correlation with bacterial infection. It seems likely that acylation of PBPs could be the trigger for primary immune response to the hapten benzylpenicillin.

Key words: drug allergy, hapten, carrier, pencillin binding proteins, adjuvant

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