IMPACT OF PHARMACOGENETICS IN SEVERE ALLERGIC ASTHMA PATIENTS TREATED WITH OMALIZUMAB

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BACKGROUND AND IMPORTANCE
The main difficulty in treatment of severe allergic asthma lies in its heterogeneity. Currently, therapies have improved with the use of monoclonal antibodies such as Omalizumab (Xolair®), which acts by binding to the CE3 domain of Immunoglobulin E (IgE), so that it cannot bind to the FceR receptor and consequently the amount of free IgE responsible for the allergic response is reduced. Despite this, there is a variability in the response to treatment and one of the possible causes is the presence of genetic polymorphisms.

AIM AND OBJECTIVE
The objective was to determine if there is an association between Arg102Gly gene polymorphism of the CE3 domain and omalizumab response.

MATERIALS AND METHODS
A retrospective cohort study was performed in a third level hospital, including 70 patients with severe asthma who had received treatment with omalizumab, for at least 1 year.

1. CLINICAL VARIABLES
2. REAL TIME PCR
Polymorphism was analyzed by real-time polymerase chain reaction (PCR) with TaqMan probes and Sanger sequencing.
3. STATISTICAL ANALYSIS
Software R 4.1.1 version.

Response was evaluated according to the indications of the Spanish Guide for the Management of Asthma (GEMA 5.0).

RESULTS
Of the 70 patients, 64% were women (45/70) and 36% men (25/70). Average patients age was 52 ± 15 years with a median treatment duration of 4 [2,6] years.

Unresponsive

Responder

Response to treatment according to the GEMA 5.0 guide

Patients carrying Arg102Gly-C allele

RESPONSE WAS INCREASED BY 30%

BIVARIATE ANALYSIS:
Response and Arg102Gly gene polymorphism

The bivariate analysis between response and Arg102Gly gene polymorphism of CE3 domain showed that patients carrying Arg102Gly-C allele (p = 0.0384; OR = 2.97; 95% CI = 1.07-8.94) presented better response to treatment with omalizumab.

CONCLUSION AND RELEVANCE
The use of biological drugs has led to a significant improvement of these patients’ life quality. However, identification of the correct therapy is a prognosis critical point. In this study, an allelic variant in C3 gene was positively associated with omalizumab treatment response. This discovery makes possible the approach to a personalised medicine that allows the improvement of prognosis in severe allergic asthma patients.

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