IMPACT OF PHARMACOGENETICS IN SEVERE ALLERGIC ASTHMA PATIENTS TREATED WITH OMALIZUMAB

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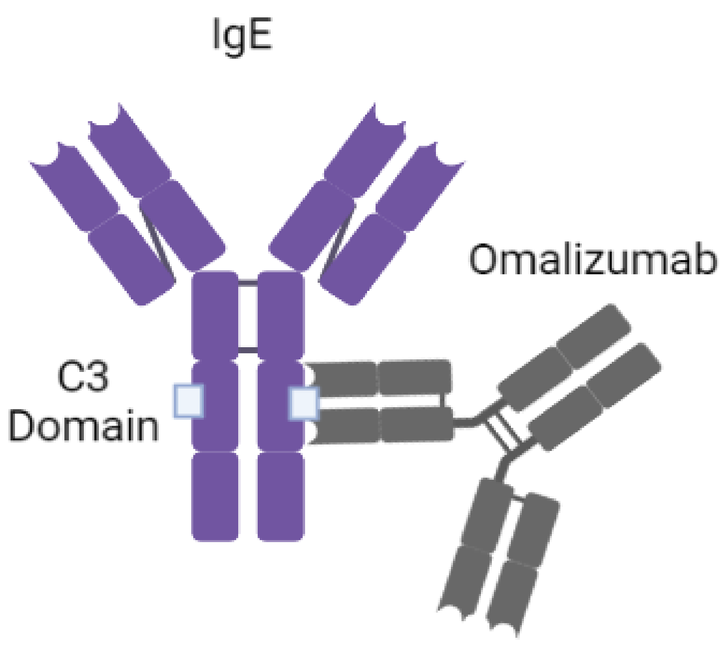
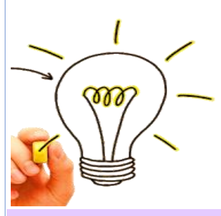
BACKGROUND AND IMPORTANCE

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 **CƐ3 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 OBJETIVE



The objective was to **determine** if there is an **association** between Arg102Gly gene **polymorphism of the CƐ3** 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

Athos-Prisma clinical software.

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**.

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 CƐ3 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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