Prevalence of allergy to wheat in patients who report a history of reactions after ingesting food which contains gluten

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The association between food allergy and celiac disease (CD) and Non celiac Gluten sensitivity (NCGS) is still to be clarified. Gluten-related disorders have gradually emerged as an epidemiologically relevant phenomenon with a global prevalence that is estimated around 5%, drawing the attention of the scientific community.

Epidemiological studies estimate a worldwide prevalence of CD of approximately 1:100 individuals, with a considerable proportion of patients remaining undiagnosed and untreated.

According to a study performed by the National Health and Nutrition Examination Survey in the United States, the prevalence of self-prescribed GFD in an unselected population of subjects aged 6 years or older was 0.5%.

Epidemiological studies report a prevalence of WA in American population of around 0.4% until 0.6%.

The diagnosis of WA is classically based on skin prick tests (SPT), in vitro specific Immunoglobulin E (sIgE) assays and functional assays. SPTs and sIgE in vitro assays are the first-level diagnostics for WA. However, they are affected by a low predictive value. In particular, their low sensitivity can be explained by the fact that the commercial test reagents are mixtures of water/salt-soluble wheat proteins that lack allergens from the insoluble gluten fraction.

In our unit of celiac disease and related conditions to gluten we visited in one year about 400 patients. Of these 113 they were not celiac but were investigated for suspected non-celiac gluten sensitivity. After in vitro tests for the exclusion of celiac disease, the same patients underwent allergologic workup consists of: skin prick tests for foods including wheat (Alk-abello), LTP (lipid transfer protein) (peach Alk abello), alpha amylase, wheat flour, barley, corn, rice, grass pollen and histamine. Also all they performed patch tests for suspected allergy to nickel, if they reported reactions after a few hours of ingestion of gluten.

Molecular-based allergy (MA) diagnostics could overcome some limitations of sIgE in vitro assays using wheat flour extracts. We have used omega-5 gliadin (Tri a 19) and nsLTP (Tri a 14), gliadin, wheat, gluten that are available in the ImmunoCAP™ assay, whereas the alpha-amylase/trypsin inhibitor (Tri a aA/ TI) is available only in the microarray ISAC™ assay. The sIgE to omega-5 gliadin assay is highly reliable and now widely used to identify the patients with WDEIA.

Of a total of 104 patients with a history of immediate reactions and not immediate after ingesting gluten, we found wheat protein sensitization in 14 patients (13%).

In addition of 300 celiac patients we also found 5 patients with allergy to wheat or wheat protein (1.5%) different percentage than that reported in the literature.