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COELIAC DISEASE

AGE NOT IMPORTANT TO T CELLS?

New research indicates that gluten-specific T-cell responses in children shortly after onset of coeliac disease do not differ substantially from those in adults with the disease, particularly in hierarchy and diversity of peptide recognition.

Most people with coeliac disease are diagnosed in adulthood, although evidence exists that the onset typically happens between 1–6 years of age. A previous study had suggested marked differences in immunological responses between children and adults, implicating consequences for therapy. However, no further studies have been conducted to replicate this finding.

"The aim of our research was to test whether fresh T cells circulating after gluten ingestion in children with coeliac disease recognize the same peptides as those implicated in adults," explains corresponding author Jason Tye-Din. His group examined four adults and 51 Australian and Italian children (3–17 years) with confirmed coeliac disease, who had been on gluten-free diets for at least 3 months before the study and were given a 3-day wheat challenge. Blood was collected before and 6 days after the challenge and T-cell responses were measured against a selection of wheat-derived peptides.

The authors observed that deamidated peptides were more immunogenic than whole protein, and peptides containing DQ2.5-glia-α1/2 and DQ2.5-glia-ω1/2 epitopes triggered the most pronounced responses. Individuals homozygous for HLA-DQ2.5 demonstrated stronger responses than patients who were heterozygous. Isolated polyclonal T cells also cross-reacted with peptides derived from barley hordein and rye secalin.

Importantly, all these responses were similar in children and adults. No association was found between response magnitude and age or time since diagnosis. T-cell receptor sequences from both study groups were similar, pointing towards corresponding abilities in antigen recognition. "The findings support the conclusion that by the time coeliac disease is diagnosed in childhood or adult life, the immune response to gluten is focused on a consistent set of dominant peptides that do not change," says Tye-Din. Antigen-specific therapeutics in current clinical development for adults might thus also benefit children.

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Original article Hardy, M. Y. *et al.* Consistency in polyclonal T-cell responses to gluten between children and adults with celiac disease. *Gastroenterology* doi:10.1053/j.gastro.2015.07.013