

**Anti-Gliadin Antibodies (AGA) In Children With Autistic Disorder**

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**Introduction:**

Autism is a pervasive development disorder affecting brain development; it affects verbal and non-verbal communication, impairs social interaction, and causes restricted and repetitive behaviour, all starting before the child is three years old. Autism will have different manifestations according to the level of general intelligence, language ability and the overall personality.

Many autistic individuals have permeable intestinal tracts, and this is often referred to as 'leaky gut'. Many reasons can account for the problem of leaky gut in autistic individuals, such as viral infection (e.g. measles), yeast infection-candida species in particular and clostridia, the human gut microflora, and heavy metals, there is some speculation that heavy metals in the intestinal tract can weaken membranes, and this, in turn can cause 'leaky gut'.

Gluten is a protein found in some grains such as wheat, barley, rye and oats, and a gluten-free-diet then, is the diet from which gluten is eliminated.

Many children with autism have gastrointestinal difficulties, making it hard for them to digest such grains. There are many possible ways in which this could affect the child with autism. The most studied theory is that in some children with autism, eating gluten leads to high levels of protein by-products,

called gliomorphins, which may affect behaviour of the child. They reduce their desire for social interaction, block pain messages, and increase confusion. If gluten is taken out of the diet, this will reduce the level of gliomorphins, and behavior will improve.

The study was conducted on two phases:

✕ Phase I:

It was a cross-sectional study that involved two groups of children, the first group included 43 autistic children and the second group included 20 normal children as control group for comparison. Their ages ranged between 3 and 12 years. These children were randomly selected from Institute of Post-Graduate Childhood Studies, Ain Shams University.

All children were subjected to the following:

1. Full-detailed History: including dietetic history, immunization history, developmental history, history of behaviour disorders, history of gastrointestinal symptoms, history of loss of acquired skills including communication, and detailed family history.
2. Clinical Examination: Complete physical examination including abdominal examination, neurological examination, and anthropometry including measuring the weight, height, and head circumference of the children.

3. Psychiatric Interview: Diagnosis by DSMIV–Diagnostic and Statistical Manual of Mental Disorders, American Psychiatric Association (1994).
4. Assessment of Severity of Autism by Autism Treatment Evaluation Checklist, ATEC (Autism Research Institute).
5. Laboratory Investigations: Venous blood samples were taken for screening antigliadin antibody (AGA) IgA by enzyme-linked immunosorbent assay (ELISA) technique (Sjoberg et al. 1994) and antiendomysial antibodies (AEM)-IgA by radioimmuno-diffusion (Asher et al. 1996). Total serum IgA was determined by radioimmunodiffusion technique.

⌘ Phase II:

Intervention study: 88.4% of the children were found to be antigliadin antibody positive, only six children of them were able to continue the gluten-free diet for 3 months, then the antigliadin antibody was repeated for them after this period, they were assessed clinically by ATEC for severity of symptoms of autism, and they were followed up clinically as for recovery of gastrointestinal symptoms.

Through this study the following results were obtained, 88.4% of patients were seropositive for (AGA)-IgA when compared to controls at cutoff 6. All patients group and control group were seronegative for (AEM)-IgA and 82.7% of the patients group and control group were seropositive for the total serum IgA at cutoff value 5.9.

The study revealed highly significant difference in ATEC before diet among patients with and without gastrointestinal symptoms, where  $z$  equal 2.798,  $p$  equal 0.01 and non-significant difference was observed as regards (AGA)-IgA before and after diet, total serum IgA and ATEC after diet among patients

with and without gastrointestinal symptoms.

Furthermore, the study showed no significant difference between allergic and non-allergic patients as regards the (AGA) -IgA before and after diet, the total serum IgA and the ATEC before and after diet.

Moreover, no significant difference was noticed between allergic and non-allergic patients group as regards the (AGA)-IgA before and after diet, the total serum IgA and the ATEC before and after diet. But a significant difference was found between the patients group and the control group as regards the level of total serum IgA where  $X$  equal 4.38 at  $p$  0.05.

There were high statistical significant differences between cases and control group in (AGA)-IgA before diet, where  $z$  equal 3.51 and  $p$  equal 0.01.

**Results:**

Our study shows that there is a significant percentage of autistic children present with gastrointestinal symptoms. Overgrowth of candida albicans, viral infections, and heavy metals in the intestinal tract are among the factors that can weaken intestinal membranes and can cause 'leaky gut'.

**Conclusions:**

We conclude that measuring anti-gliadin antibodies is an important tool for diagnosis of gluten sensitive enteropathy and also for monitoring compliance to a gluten free diet.