Introduction

- Leaky Gut Hypothesis has been used to explain why children with ASD have higher rates of GI symptoms: Children with ASD have higher intestinal permeability which allows molecules from ingested food to enter bloodstream and disrupt brain development.
- Gut-brain connection reaffirmed by animal models of ASD.
- Current research about efficacy of gluten-free (GF) and casein free (CF) diets in improving ASD behaviors and combating the effects of the “leaky gut” has reported mixed results.
- Current research has also failed to take into account RRBs, a core feature of ASD, while mainly focusing on social and communication deficits.
- RRBs are negatively correlated with age and NVIQ scores.

Objective

Primary: to evaluate the effects of dietary limitations on the occurrence and severity of restricted and repetitive behaviors in children diagnosed with autism.
Secondary: to examine the relationship between GI symptoms, RRB frequencies, and special diets.

Methods

- Data used in this study was originally collected as part of a nation-wide study to understand the genetic basis of ASD.
- Sample: 62 Participants
  - 31 on special diet to improve ASD behaviors
  - 31 matched controls by age and NVIQ (Figure 1).
- Measures: Diet and GI symptoms reported by parent in medical history. BSIQ andADOS used to evaluate severity and number of RRBs.
  - BSIQ- parent measure
  -ADOS- professional observer measure
  -Severity- sum of all codes
  -Counts- number of endorsed behaviors
- Statistical Tests: T-tests & Correlational Tests
  - 2- tailed parametric independent sample T-test for BSIQ counts and ADOS severity
  - Mann-Whitney T-test for BSIQ severity, ADOS counts, and number of GI symptoms.
  - Spearman’s rank-order correlation coefficient for number of GI symptoms and RRB measures

Results

- Diet and RRBs: When comparing the counts and severity of RRBs reported in the BSIQ and the ADOS between the diet group and the control group, no significant differences emerged. The data was then broken down even further, to compare the specific type of diet within the diet condition. An example of what the results look like is seen in figure 2, which shows the ADOS severity by group condition. In the most significant of the p-values, it is shown that participants on a GF diet had a higher severity of RRBs on the ADOS.
- GI Symptoms and Diet: Participants on a special diet reported a higher number of GI symptoms than their control counterparts (figure 3).
- GI Symptoms and RRBs: The number of GI symptoms was not correlated to the severity or counts of RRBs in the BSIQ or ADOS.

Methods Cont.

Individual Participant Matching by Age and NVIQ

Average Number of GI Symptoms by Condition

Discussion

- Children on special diets did not have significantly different RRB profiles from their control matches.
- Participants in special diet condition had a higher average number of GI symptoms than control group.
- Diets might be used by parents to help regulate GI symptoms, but it is unknown if they positively affect RRBs.

Limitations

- Correlational study design (not experimental). Unable to obtain baseline RRB before and after diet.
- Relatively small sample size, especially when breaking down the special diet condition into its specific diets.
- Not controlled for gender differences in RRB presentation.
- Reliance on dietary report from parent.

Conclusion

Parents are using special diets as an alternative method to improve ASD behaviors and to alleviate GI symptoms, but it is still unknown whether diets are effective for these two goals. More research is needed to understand the role of diets in RRBs and GI symptoms.

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References