The Children with Attention-Deficit/Hyperactivity Disorder (ADHD) More Likely Creates to Irritable Bowel Syndrome

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Abstract

The research aimed study the children with attention-deficit/hyperactivity disorder (ADHD) more likely Creates to irritable bowel syndrome at Ibn-Rushd Psychiatric Teaching Hospital in Baghdad city, find out the relationship between demographic characteristic, irritable bowel syndrome and Attention-Deficit/ Hyperactivity disorder patients. A purposive (non-probability), the sample included (100) patients, from (3-11) years old. A descriptive study carried out from December 10th 2018 to the February 25th 2019, from family Attention-Deficit/Hyperactivity Disorder outpatients of Ibn-Rushd Psychiatric Teaching Hospital in Baghdad city. A questionnaire was constructed for the purpose of the study, which was a consisted of (2) part. The 1st part included the demographic characteristics and the 2nd part included the items related with irritable bowel syndrome. Data were analyzed through descriptive statistical approach (frequency and percentage) and inferential statistical approach (correlation coefficient). Scores, Perpson, lycart scale analysis that include, t-test, and stepwise multiple regression. The result of the study confirmed that the mean of score for the age of sample was (7.1) year, most of them male urban, low score for socio-economic status, strong positive to irritable bowel syndrome.

Key Words: *Attention-Deficit/Hyperactivity Disorder (Adhd) And Irritable Bowel Syndrome*

Introduction

The children with attention-deficit/hyperactivity disorder (ADHD), which is a brain disorder marked by an ongoing pattern of inattention and/or hyperactivity-impulsivity that interferes with functioning or development, neurodevelopmental disorder characterized by impaired social interaction, verbal and non-verbal communication, and restricted and repetitive behavior [1]. Attention-deficit/hyperactivity disorder is a widespread chronic disorder affecting children's well-being and success in life. The historical understanding of ADHD has changed over the years [2]. ADHD was defined in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-III-R in 1987 as a disorder with a specific diagnostic checklist and three subtypes primarily inattentive, primarily hyperactive, and combined. According to the American Psychiatric Association in the DSM-V, to be considered ADHD, a child must have symptoms before the age of 12, for at least six months, and affecting two domains of life. The prevalence of the three subtypes of ADHD are primarily inattentive (20–30% of diagnosed population), primarily hyperactive-impulsive (less than 15%), and combined subtype (50–75%) [3]. The prevalence of ADHD in the US among children is estimated at 11%. ADHD is very common among children and adolescents, consisting of about 50% of children psychiatric diagnoses [4]. One of the most significant contributing factors in the children with Attention-Deficit/Hyperactivity Disorder (ADHD) appears to be undesirable foods and chemicals that come from parents who've noticed vast improvements in their children after changing their diets [5]. The strongest direct evidence of foods linked to attention-deficit/ hyperactivity disorder involves wheat and dairy, and the specific proteins they contain namely, gluten and casein. These are difficult to digest and, especially if introduced too early in life, may result in an allergy. Fragments of these proteins, called peptides, can have big impacts in the brain.

Methods and Patients

A purposive (non-probability) sample of (100) patients with a diagnosis of ADHD, from (3-11) years old, who were selected from Ibn-Rushd Psychiatric Teaching Hospital in Baghdad city, had been chosen.

The study was conducted in order to correlation between ADHD patients and irritable bowel syndrome through the period from December 10th 2018 to the February 25th 2019, from family ADHD outpatients of Ibn-Rushd Psychiatric Teaching Hospital in Baghdad city. For the purpose of the present study, a questionnaire was constructed by the researcher to study the variable for ADHD patients and irritable bowel syndrome. Data were analyzed through descriptive statistical approach (frequency and percentage) and inferential statistical approach (correlation coefficient) Scores, Perpson, likert scale analysis that include, t-test, and stepwise multiple regression.

A questionnaire was constructed for the purpose of the study. It was composed of (2) major parts, and overall items, which were included in the questionnaire, were (29) items. Part I consist of (10) items related with demographic data for ADHD children which consisted of age, gender, body mass index, the age of child during diagnosis/year, the number of children in his family, and demographic data for ADHD children family which consisted of age of parents, gender, residential area, the age of mother during labor and socio-economic status. Part II consist of (19) items which included the symptoms of irritable bowel syndrome for child with ADHD. Reliability was determined through a pilot study. The data was analyzed through the application of the descriptive statistical, (Frequency and Percentage) and the inferential statistical data analysis approach Chi-square, Person correlation coefficient, all the patients under treatment and diagnosis by psychiatrist.

Results

Table (1): Mean of scores for items of the irritable bowel syndrome, and the association between irritable bowel syndrome and attention-deficit/hyperactivity disorder.

No.	**Items**	**3**	**2**	**1**	**M.S.**	**Sig.**
	The child suffer from	**Always**	**Some time**	**Never**		
1.	abdominal pain: a child may not be able to express his pain this pain appears in the form of tantrums and self-harm.	72	20	8	2.64	H.S.
2.	obvious bulge in the abdomen.	71	21	8	2.63	H.S.
3.	gaseousness/bloating sensation.	84	13	3	2.81	H.S.
4.	bad odor in the mouth.	50	35	15	2.35	S.
5.	strange smell out and overly bad.	80	7	13	2.67	H.S.
6.	undigested food presence in the stool.	58	27	15	2.43	S.
7.	some behaviors that the child shows a great desire to reclining on his stomach.	79	13	8	2.71	H.S.
8.	whether sleeping on the stomach or abdominal pressure on the edges of the tables.	73	19	8	2.65	H.S.
9.	weakness or delayed of physical growth.	81	8	`11	2.70	H.S.
10.	Difficulty sleeping, as result of presence of excess acidity in the stomach.	78	14	8	2.70	H.S.
11.	more frequency and under order of defecation.	71	19	10	2.61	H.S.
12.	constipation.	7	21	72	1.45	N.S.
13.	diarrhea.	73	11	16	2.57	H.S.
14.	defecation on himself.	81	6	13	2.68	H.S.
15.	pain on stooling.	69	17	14	2.55	H.S.
16.	vomiting.	52	23	25	2.27	S.
17.	sensitivity to foods.	70	18	12	2.58	H.S.
18.	blood in stools.	8	19	73	1.35	N.S.
19	food inauspiciousness	81	10	9	2.72	H.S.
Total		1238	321	341	2.47	S.
X^2 obs. =45.160 df = 11 X^2 crit. = 18.307 P < 0.050						

This table shows that the mean of scores is highly significant in items (1, 2, 3, 5, 7, 8, 9, 10, 11, 13, 14, 15, 17, 19), significant on items (4, 6, 16), no significant on item (12, 18) and attention-deficit/hyperactivity disorder. The table also shows that there was significant association between irritable bowel syndrome, and attention-deficit/hyperactivity disorder.

Table (2): Pearson correlation between age of child, gender, body mass index, age child during diagnosis, number of child in his family, age of parents, gender, residual area, age of mother during labor, socio-economic status, irritable bowel syndrome and attention-deficit/hyperactivity disorder.

Variable		Age of child	Gender	Body Mass Index	ADHD diagnosis	No. of child family	Irritable bowel syndrome
Age of child	Co. Sig. No.		.597** C1 .000 100	.459** C2 .001 100	.790** C3 .000 100	.671** C4 .000 100	.657** C5 .000 100
Gender	Co. Sig. No.			.368** C6 .000 100	.641** C7 .000 100	.538** C8 .000 100	.719** C9 .000 100
Body Mass Index	Co. Sig. No.				.510** C10 .000 100	.684** C11 .000 100	.706** C12 .000 100
ADHD diagnosis	Co. Sig. No.					.649** C13 .000 100	.685** C14 .000 100
Age of parents	Co. Sig. No.	.795** C15 .000 100	.764** C16 .000 100	.595** C17 .000 100	.755** C18 .000 100	.707** C19 .000 100	.830** C20 .000 100
Irritable bowel syndrome	Co. Sig. No.	.657** C21 .000 100	.719** C22 .000 100	.706** C23 .000 100	.685** C24 .000 100	.830** C25 .000 100	.857** C26 .000 100
Residual area	Co. Sig. No.	. 701** C27 .000 100	.636** C28 .000 100	.579** C29 .000 100	.623** C30 .000 100	.846** C31 .000 100	.700** C32 .000 100
Age of mother during labor.	Co. Sig. No.	.853** C33 .000 100	.458** C34 .000 100	.587** C35 .000 100	.711** C36 .000 100	.482** C37 .247 100	.541** C38 .000 100
Socio-economic status	Co. Sig. No.	.764** C39 .000 100	.339** C40 .000 100	.125 C41 .000 100	.561** C42 .000 100	.182 C43 .000 100	.308** C44 .000 100

C = Cell, Co. = Correlation coefficient, Sig. = Significant (2- tailed), N. = Number of sample.

This table shows that the relationship in the all of the cells.

(C1 It means relationship between age and gender, C13 It means relationship between age of parents and …etc.).

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Discussion

Table (3) shows that the mean of scores for irritable bowel syndrome is a highly significant in all items expected itemes (4, 6 and 16) was significant, and the items (12, 18) was non significant. The table also shows the association between dietary pattern and attention-deficit/hyperactivity disorder.The table shows that there was a significant association between irritable bowel syndrome and attention-deficit/hyperactivity disorder. Recent research shows that more than 50% of children with attention-deficit/hyperactivity disorder have GI symptoms, food allergies, and maldigestion or malabsorption issues. It's obvious from talking to parents that GI problems are a major concern in children with attention-deficit/hyperactivity disorder. Listservs dealing with attention-deficit/hyperactivity disorder have discussions on GI issues all the time. Antifungal use, both prescription and alternative remedies, is a common topic. Parents have tried "anti-yeast" diets, prescription drugs and natural remedies, but nothing seems to be "the answer" to the chronic microbial problems these kids face [19]. Altered intestinal permeability was found in 43% of attention-deficit/hyperactivity disorder patients, but not found in any of the controls (Harvard University). Intestinal permeability, commonly called "leaky gut", means that there are larger than normal spaces present between the cells of the gut wall. When these large spaces exist in the small intestine, it allows undigested food and other toxins to enter the blood stream. When incompletely broken down foods enter the body, the immune system mounts an attack against the "foreigner" resulting in food allergies and sensitivities. The release of antibodies triggers inflammatory reactions when the foods are eaten again. The chronic inflammation lowers IgA levels. Sufficient levels of IgA are needed to protect the intestinal tract from clostridia and yeast. The decreasing IgA levels allow for even further microbe proliferation in the intestinal tract. Vitamin and mineral deficiencies are also found due to the leaky gut problem [20]. Table (4) indicated that there was strong positive relationship in cell (20, 25, 26, 31, 33, 41, 3, 9, 12,15, 16, 18, 19, 22, 23, 27, 32, 36, 39, 4, 5, 7, 11, 13, 14, 21, 24, 28, 30, 1, 8, 10, 17, 35, 38 and 42), positive relationship in cell (4, 2, 34, 37, 6, 40, 44 and 43). Unusual eating behavior occurs in about three-quarters of children with attention-deficit/hyperactivity disorder (ADHD), to the extent that it was formerly a diagnostic indicator. Selectivity is the most common problem, although eating rituals and food refusal also occur, this is appear to result in malnutrition, although some children with attention-deficit/hyperactivity disorder also have gastrointestinal (GI) symptoms [21]. In a healthy intestinal tract the small intestine and stomach are not inhabited by bacteria. When the flora balance in the colon is lost, the microbes can migrate into the small intestine and stomach, which hampers digestion. The microbes compete for nutrients and their waste products overrun the intestinal tract. One of the toxins produced by yeast is actually an enzyme that allows the yeast to bore into the intestinal wall. The yeast also produces other toxins such as organic acids, which can also damage the intestinal wall [22]. Bacterial growth in the small intestine destroys enzymes on the intestinal cell surface, which prevents carbohydrate digestion and absorption. The last stage of carbohydrate digestion takes place at the minute projections called microvilli. Complex carbohydrates that have been broken down by the enzymes embedded in the microvilli can be absorbed properly and enter the blood stream. But when the microvilli are damaged, the last stage of digestion cannot take place. At this point only monosaccharides can be absorbed because of their single molecule structure. In the small intestine, the body should absorb the nutrients needed from what is eaten. But in the case of malabsorption, the undigested carbohydrates left in the small intestine cause the body to draw water into the intestinal tract. This pushes the undigested carbohydrates into the colon where the microbes can feast on it. This allows for even more proliferation of the unwanted microbes and continued increase in malabsorption problems. Some parents of children with attention-deficit/hyperactivity disorder believe their children are allergic or sensitive to the components found in these foods. Some seek allergy testing for confirmation. Yet, even when no allergy is confirmed, many parents of attention-deficit/hyperactivity disorder children still

choose to offer the gluten-free/casein-free (GFCF) diet. Among the benefits they report are changes in speech and behavior. A gluten-free/casein-free (GFCF) diet is also known as the GFCF diet. It is one of several alternative treatments for children with attention-deficit/hyperactivity disorder. When following this strict elimination diet, all foods containing gluten and casein (found in milk and dairy products) are removed from the child's daily food intake. The benefit of a gluten-free/casein-free diet is based on the theory that children with attention-deficit/hyperactivity disorder may have an allergy or high sensitivity to foods containing gluten or casein. Children with attention-deficit/hyperactivity disorder, according to the theory, process peptides and proteins in foods containing gluten and casein differently than other people do. Hypothetically, this difference in processing may exacerbate attention-deficit/hyperactivity disorder symptoms. Some believe that the brain treats these proteins like false opiate-like chemicals. The reaction to these chemicals, they say, leads a child to act in a certain way.

Conclusions

Results indicate greater prevalence of irritable bowel syndrome symptoms among children with ADHD. Identified studies involved high methodological variability and lack of comprehensive data prohibited analysis of GI pathophysiologies typically associated with organic etiologies, limiting conclusions about the underpinnings of the observed association. Future research must address critical questions about the causes and long-term impact of GI symptoms in ADHD.

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Conflict of Interest: None to declare.

Ethical Clearance: All experimental protocols were approved under the College of Health and Medical Technologies and all experiments were carried out in accordance with approved guidelines.

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