Turk J Gastroenterol *2017; 28: 465-70*

Pediatric Gastroenterology

Clinical findings, child and mother psychosocial status in functional constipation

Yeliz Çağan Appak[1], Şermin Yalın Sapmaz[2], Güzide Doğan[3], Ahmet Herdem[2], Beyhan Cengiz Özyurt[4], Erhun Kasırga[3]

[1]Department of Pediatric Gastroenterology, Tepecik Training and Research Hospital, İzmir, Turkey
[2]Department of Child and Adolescent Psychiatry, Celal Bayar University School of Medicine, Manisa, Turkey
[3]Department of Pediatric Gastroenterology, Celal Bayar University School of Medicine, Manisa, Turkey
[4]Department of Public Health, Celal Bayar University School of Medicine, Manisa, Turkey

Cite this article as: Appak YÇ, Sapmaz ŞY, Doğan G, Herdem A, Özyurt BC, Kasırga E. Clinical findings, child and mother psychosocial status in functional constipation. Turk J Gastroenterol 2017; 28: 465-70.

ABSTRACT

Background/Aims: Functional constipation (FC) is a common problem in childhood. In this study, we aimed to analyze the clinical and sociodemographic findings of patients with FC, parenting behaviors, and psychosocial states of children and parents.

Materials and Methods: According to the Roma III diagnosis criteria, 32 patients with FC and 31 healthy controls were included. Patients' clinical and sociodemographic data set associated with constipation was determined. Strengths and Difficulties Questionnaire was used to screen the emotional and behavioral problems in children. To evaluate the parents and family, Beck Depression Inventory, State-Trait Anxiety Inventory, Parental Attitude Research Instrument were used.

Results: Emotional and peer problems subscale scores, parental concerns as well as over-parenting attitude were found higher in patients. Significant difference was also observed between the groups in terms of mean score of authoritarian attitude dimensions. Attitude of hostility and rejection and marital discordance was found to be significantly high in patient families. Our study revealed a decrease in the constipation rate with the increasing education level of parents, higher rate of constipation in families with less income than expenses, and lower rate of working mothers in patients with constipation. Parents' depressive symptoms and anxiety level were determined to be considerably higher.

Conclusion: A mother's low education level, low socioeconomic level, presence of psychological symptoms, and problems of parental attitude-primarily the authoritarian attitude-increase the risk of FC occurrence. Therefore, FC patients and their families should definitely undergo a psychosocial assessment.

Keywords: Constipation, child, parental attitude, psychosocial factors

Original Article

INTRODUCTION

Constipation is a major health problem in childhood and is responsible for 3% of the general pediatric clinical cases and 25% gastroenterology cases. Constipation in childhood is usually not dependent on an organic cause; over 90% of cases are due to functional reasons (1,2). The global prevalence of functional constipation (FC) in children is estimated as 3% (3).

Children with FC may deteriorate with regard to emotional, social, physical, and psychological states (4-6). The continuing constipation may affect the child's psychosocial development, parent-child relationship, relations with friends and siblings, and success in school (7-8). In addition, the child's hard temperament, mother's distress, and relation problems between parents and the child can result in the initiation and continuation of constipation (4-6). Parents have an impact on the

This study was presented at the 50th Annual Meeting of ESPGHAN, 10-13 May 2017, Prague, Czech Republic.
Address for Correspondence: Yeliz Çağan Appak E-mail: yelizcagan@yahoo.com
Received: April 18, 2017 **Accepted:** June 16, 2017 **Available Online Date:** October 25, 2017

emotional and physical development of the child according to family dynamics. Disruption of intrafamilial balance negatively affects the child's development and may lead to development of physical symptoms, such as constipation, which involve psychological and behavioral symptoms (7).

This study includes an assessment of the clinical and sociodemographic findings of children with FC, psychological symptoms of the children and mothers, and parental attitudes and aims to determine their effect on FC.

MATERIALS AND METHODS

Study Population

This prospective study included 32 children diagnosed with FC aged 4-18 years and 31 healthy controls admitted to the pediatric gastroenterology outpatient clinic between May 2015 and October 2015. FC diagnosis was made according to the Rome III diagnostic criteria (9). Patients with organic-induced constipation, neurological problem, and those not meeting the diagnostic criteria were excluded. Parents and children who read the patient informed consent form and accepted to participate in the study were included. Sociodemographic data of the patients, their symptoms, clinical findings, secondary complications to constipation, and dietary habits were questioned. The study was approved by the local ethics committee.

Child and Family Assessment Tools

Strengths and Difficulties Questionnaire (SDQ)

It is scale used for scanning the emotional and behavioral problems in children. It includes 25 questions on the positive and negative behavioral properties. Each of these questions is divided into five sub-headings containing five questions on attention deficiency and hyperactivity, behavioral problems, emotional problems, peer problems, and social behavior. Each of the subheadings can be evaluated separately with individual scores, while "total difficulties scores" can be calculated by summing up the first four titles. The questionnaire includes a parent-teacher form for the children aged 4-16 years along with the forms to be completed by adolescents aged 11-16 years (10).

Beck Depression Inventory (BDI)

Developed by Beck and his colleagues, the BDI scale measures physical, emotional, and cognitive symptoms seen in depression. It is a self-rating scale consisting of 21 symptom categories. The highest score to be considered is 63. A high total score indicates the severity of depression. The validity and reliability study was conducted by Hisli in our country (11). In our study, it was used to scan depressive symptoms in parents.

State and Trait Anxiety Inventories

The scale, developed by Spielberg and his colleagues in 1970, was converted to Turkish by Öner and Le Compte in 1977. It was used to investigate the anxiety level by making adaptations (11). State Anxiety Inventory determines how an individual feels in a certain time and under certain conditions. Trait Anxiety Inventory identifies how individual feels regardless of the circumstances and conditions. The total score value obtained from the both scales varies between 20 and 80. A high score indicates higher anxiety levels, while a lower score indicates low anxiety levels. In our study, it was used to scan signs of anxiety in parents.

Parental Attitude Research Instrument (PARI)

It was developed by Schaefer and Bell in 1958 and converted to Turkish by Le Compte and his colleagues in 1978 (11). The test revised in accordance with the Turkish conditions contains 60 clauses and 5 subscales. Answers of mothers are evaluated in five different dimensions, including attitude of overparenting, democratic attitude and recognition of equality, attitude of hostility and rejection, marital discordance, and authoritarian attitude. Increased scores in the factors other than the "Democratic attitude subscale" aspect indicate negative parental attitudes. Factor scores are evaluated from the scale.

Statistical Analysis

Quantitative variables were expressed as mean, standard deviation; categorical variables were expressed as numbers and percentages. The conformity assessment of normal distribution of numerical data for a single sample was performed using the Kolmogorov-Smirnov test; samples conforming to normal distribution were evaluated using Student's t-test and those not conforming were evaluated using the Mann-Whitney U test. Chi-square test was used for categorical variables. The Pearson and Spearman correlation analysis was used to determine the relationship between the levels of continuous quantitative data. Data with significant difference between groups with and without FC were analyzed using binary logistic regression analysis. All statistical tests were performed using the Statistical Package for the Social Sciences 15.0 software (SPSS Inc.; Chicago, IL, USA). A p value of <0.05 was considered statistically significant.

RESULTS

Fourteen patients with FC (43.8%) were males and 18 (56.2%) were females; 16 healthy controls (51.6%) were males and 15 (48.4%) were females. The average age of FC patients was 8.6±2.9 years and that of the healthy controls was 9.1±2.9 years. The average duration of constipation was detected as 34.5 months (min-max, 2-132 months), and the average stool frequency was detected as 2.4±1.4 weeks. Twenty-one (65.6%) patients with FC had retentive posturing, 31 (96.9%) had painful defecation, 30 (93.8%) had rectal fecal mass, and 20 (62.5%) had large-diameter stool story. Constipation was accompanied by abdominal pain in 27 (84.4%) patients. Rectal bleeding was noted in 7 (21.9%) patients with FC and anal fissures in 9 (28.1%) patients.

Table 1. Clinical and sociodemographic data of patients with FC and healthy controls

	FC n (%)	Healthy control n (%)	p*
Encopresis	9 (28.1)	3 (9.7)	0.06
Enuresis	14 (43.8)	2 (6.5)	0.001
Force in-toilet training	7 (21.9)	5 (16.7)	0.7
Using school toilet			
Yes	19 (70.4%)	23 (%74.2)	0.7
No	8 (29.6%)	8 (%25.8)	
Type of toilet			
Squatting pan	12 (37.5)	8 (27.6)	0.7
Western water closet	19 (59.4)	20 (69)	
Potty	1 (3.1)	1 (3.4)	
Constipation family history	17 (53.1)	6 (19.4)	0.016
Nutrition			
Fruit consumption	27 (84.4)	27 (87.1)	1
Vegetable consumption	24 (75)	25(80.6)	0.7
Family education level			
Primary school	18 (56.3)	4(12.9)	<0.001
Middle school	7 (21.9)	3 (9.7)	<0.001
High school	6 (18.8)	10(32.3)	<0.001
University	1 (3.1)	14 (45.2)	<0.001
Father education level			
Primary school	13 (40.6)	2 (6.5)	<0.001
Middle school	4 (12.5)	0 (0)	<0.001
High school	11 (34.4)	12 (38.7)	<0.001
University	4 (12.5)	17 (54.8)	<0.001
Socioeconomic level			
More income than expense	2 (6.3)	4 (12.9)	0.001
Less income than expense	18 (56.3)	4 (12.9)	0.001
Equivalent income and expense	12 (37.5)	23 (74.2)	0.001
Mother working status			
Yes	7 (21.9)	18 (58.1)	0.005
No	25 (78.1)	13 (41.9)	

FC: functional constipation
*Chi-square analysis was used

Enuresis was more frequently detected in patients with FC. We have observed that ratio of constipation decreased as parents' level of education increased; that ratio was higher for those patients whose income was lower than their expenses, and the ratio of working mothers was lower in patients with constipation. Other clinical findings and sociodemographic data of FC patients in comparison to healthy controls are shown in Table 1.

There was a meaningful difference in the emotional and peer problems subscale points of the SDQ. SDQ completed by children and parents are provided in Table 2.

Parents' depressive symptoms and anxiety level were determined to be meaningfully higher in the FC group. The evaluation of parental attitudes revealed that the average point of authoritarian attitude dimension, attitude of overparenting, marital discordance, and attitude of hostility and rejection dimension was considerable and statistically different between the groups. Results of BDI, State and Trait Anxiety Inventory, and PARI completed by parents are shown in Table 3.

A logistic regression model was formed to assess independent risks of different variables that affect the presence of FC. The variables considered were mother's education level, father's education level, family's constipation story, PARI overparenting dimension, PARI attitude of hostility and rejection dimension, PARI marital discordance dimension, PARI authoritarian attitude dimension, mother's psychological symptom level, and children's psychological symptom level. The model revealed that the constipation diagnosis was 10.15 times more (95% confidence interval [CI], 2.45-41.91) when the mother's was education was for ≤8 years; 6.33 times more (95% CI, 1.27-31.52) when the children scored one point more than the threshold level in the SDQ emotional problems subscale; and 1.08 times more (95% CI, 1.00-1.15) when the mothers presented a high score in the PARI authoritarian attitude dimension (Table 4).

DISCUSSION

Functional constipation can depends on many factors, such as stool retention, problems occurring during toilet training, poor fiber diet (12). Also, compulsory toilet training and painful defecation are important factors that trigger constipation. In our study, retentive posture was detected in 65.6% and painful defecation in 96.9% of patients with FC. In 21.9% of patients and in 16.7% of healthy controls, forced in-toilet training was found, and no significant difference was observed. Consumption of fiber-rich fruits and vegetables was found to be similar in patients and healthy controls. Not using school toilet may initiate stool retention behavior in elder children. Fecal retention behavior, leading to a vicious cycle, results in big, hard, and painful defecation (2,3). Our study revealed that 29.6% of the patients attending school were not using school toilet; however, no statistically significant difference was observed between healthy controls and patients. When patients and healthy controls were compared, no significant difference was observed for the type of toilet used. In the literature, constipation history has been reported in the families of 30.5%-59% children with constipation (13,14). In our study, constipation history in families was found to be higher in patients (53.1%) than in healthy controls (19.4%).

Table 2. SDQ findings in parents and children

	Child notification			Parental notification		
	FC n Mean±SD	Control n Mean±SD	p**	FC n Mean±SD	Control n Mean±SD	p**
SDQ						
Emotional problems	5.77±2.38	2.33±2.80	0.012	4.40±2.52	1.74±2.06	0.0001
Conduct problems	3.22±1.30	2.75±1.42	0.917	2.50±200	1.74±1.50	0.094
Problems ADH	5.77±2.16	3.50±2.50	0.041	4.50±2.46	3.51±1.98	0.086
Peer problems	3.22±1.30	2.75±1.42	0.508	3.93±2.40	2.16±1.39	0.001
Social skills	7.00±1.87	6.66±3.25	0.972	7.87±1.51	7.83±2.45	0.944

FC: functional constipation; ADH: attention deficit hyperactivity; SD: standard deviation; SDQ: Strengths and Difficulties Questionnaire
**T-test was applied

Table 3. Scores of BDI, State and Trait Anxiety Inventory, and PARI

	FC n Mean±SD	Control n Mean±SD	p****
BDI	11.34±8.34	5.16± 7.0	0.003
State Anxiety Inventory	39.62±10.75	34.09±9.94	0.038
Trait Anxiety Inventory	45.25±6.42	39.70±8.56	0.005
PARI			
Attitude of over-parenting	48.75±9.11	41.12±14.36	0.014
Democratic attitudes	25.84±4.34	24.61±2.84	0.188
Attitude of hostility and rejection	32.93±9.51	28.12±8.18	0.036
Marital discordance	15.71±4.40	13.06±4.12	0.016
Authoritarian attitude	43.37±9.73	34.12±9.73	0.0001

FC: functional constipation; PARI: Parental Attitude Research Instrument; BDI: Beck Depression Inventory; SD: standard deviation
****T-test was applied

Table 4. Factors found to be relevant with FC as a conclusion of logistic regression model

Variable§	Multi-variable analysis OR value (95% CI)
Mother's education level	10.15 (2.45-41.91)
SDQ emotional problems	6.33 (1.27-31.52)
PARI authoritarian attitude	1.08 (1.00-1.15)

FC: functional constipation; OR: odds ratio; CI: confidence interval; PARI: Parental Attitude Research Instrument; DQ: Strengths and Difficulties Questionnaire
§The variables included in the model were mother's education level, father's education level, family constipation story, PARI over-parenting dimension, PARI attitude of hostility and rejection dimension, PARI marital discordance dimension, PARI authoritarian attitude dimension, psychological symptom level of the mother, psychological symptom level of the children

Chronic retention of feces has contributed to the development of recurrent abdominal pain and urinary tract pathology (15). Overall, 84.4% of our patients had abdominal pain; 43.8% patients had enuresis and statistically significant difference was found when compared to healthy controls. Encopresis is one of the main clinical symptoms, which may occur in patients with constipation. Studies have shown encopresis to be associated with the severity of constipation. In a study where children with constipation in our country were evaluated, encopresis was determined in 51.7% (13), and this ratio was found to be 28.1% in our study. In addition, encopresis ratios of 75%-90% have been reported in children with constipation (16). The encopresis frequency is proportional to the duration of constipation and age of the patient (13). The difference in the frequency of encopresis in the studies is thought to be due to the differences in constipation frequency of patient groups, age distribution, and severity. In one-half of the FC patients, anal fissure and/or rectal bleeding complications were observed.

In our study, decrease in constipation rate with increasing education level of parents, higher rate of constipation in families with less income than expenses, and decreased constipation rate in families with equal or greater income than expenses were observed. In another study, lower education level in parents with FC and lower proportion of working mothers were observed similar to our study (14). Although the reported low socioeconomic and education levels affect the prevalence of constipation, this is a controversial issue (17). Particularly, low level of maternal education is thought to be a reflection of the low income and social level, which can influence the lifestyle and dietary habits (14).

Functional constipation is often seen as a minor problem by families and the importance is ignored. Constipation, accompanying chronic abdominal pain symptoms, fecal incontinence can cause psychosocial difficulties and stress within families. Compared to children with other chronic gastrointestinal diseases, children with constipation may be quiet, withdrawn, shy, and nervous (18). These symptoms in children with constipation are usually neglected.

Emotional problems subscale scores of SDQ were found significantly high in our FC patients. Both symptoms of anxiety and depression are related to functional somatic symptoms. Janssenss et al. (19) reported that psychological symptoms were not results but risk factors for somatic complaints. Children diagnosed with anxiety disorders compared to healthy controls have been reported to have

significantly more functional gastrointestinal disorders. In a study, a 40.7% of functional gastrointestinal disorders was seen in children with anxiety symptoms and 5.9% in healthy controls, and they were significantly diagnosed with FC (20). In a study, children with constipation and healthy controls were evaluated using the Behavior Rating Scale for Children and Young People, and the anxiety/depression subscale and total score was found significantly higher (14). It is reported that anxiety and depressive disorders accompanying somatic symptoms cause problems in school performance and may lead to school refusal, thereby decreasing the school achievement regardless of psychiatric disorders (21). Therefore, early diagnosis and regulation of the treatment is important.

Anxiety and depression symptoms of mothers of children with FC were found to be significantly higher than those of the mothers of healthy children in our study. Results of different studies indicate that parents of children with functional somatic symptoms often experience psychosocial problems, psychiatric disorders as well as somatoform symptoms and/or somatic diseases themselves (22). Kılıçaslan et al. (14) reported that mothers of children having FC diagnosis had significantly higher level of psychological complaints.

In this study, mothers of children with FC had increased attitudes of over parenting, hostility and rejection, marital discordance on the child-rearing activities and over-punishing, and a rigid parental attitude as compared to mothers of the control group. This might indicate that mothers of children with FC are unhappier and more unsatisfied with respect to their maternal role than those of the control group. Mothers of the children with FC were nervous, distressed, and angry in their relationships with their children. At the same time, the mothers of children with FC were observed to be more protective toward their children, had high expectations from their children, believed in strict discipline, and presented negative attitudes. The studies presented a meaningful relation between extremely protective attitude of parents and functional somatic symptoms that cannot be explained medically and that had no organic cause. Extremely protective attitude of parents both resulted in the formation of somatic symptoms and continuation of the symptoms in the long term (23). Parental attitudes regarding child rearing are associated with FC in children (24). Amendola et al. (25) reported that two-thirds of children with constipation lacked autonomy, lived under parental authority, and had a "peripheral" father with a mother-child symbiotic relationship. Kılıçaslan et al. (14) confirmed these findings by identifying high levels of mother-reported strict discipline and overprotective parenting. Clinicians work with parents collaboratively to manage constipation, and addressing parenting issues should be incorporated into treatment. Referral to mental health services is needed when parenting difficulties hinder treatment or when the parent-child relationship is at risk.

In conclusion, a mother's low education level, presence of psychological symptoms in children and mothers, problems of parental attitude, primarily the authoritarian attitude, increase the risk of FC. Thus, patients with FC and their parents should certainly be evaluated from a psychosocial point of view.

Ethics Committee Approval: Ethics committee approval was received for this study from the ethics committee of Celal Bayar University School of Medicine (Decision Date: 08.04.2015/Decision No: 20478486-180).

Informed Consent: Written informed consent was obtained from patients and parents of the patients who participated in this study.

Peer-review: Externally peer-reviewed.

Author contributions: Concept - Y.Ç.A, Ş.Y.S; Design - Y.Ç.A, Ş.Y.S.; Supervision - E.K.; Resource - E.K., Ş.Y.S.; Materials - Y.Ç.A, Ş.Y.S, G.D, A.H.; Data Collection and/or Processing - Y.Ç.A, G.D., A.H., B.C.Ö.; Analysis and/or Interpretation - Y.Ç.A, Ş.Y.S, G.D., B.C.Ö; Literature Search - Y.Ç.A, Ş.Y.S, G.D, A.H.; Writing - Y.Ç.A, Ş.Y.S; Critical Reviews - E.K., B.C.Ö.

Acknowledgements: The authors would like to thank Yeşim Yiğit for her assistance on data collecting.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study has received no financial support.

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