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The Role of Psychosocial Factors in Children with Recurrent Abdominal Pain

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Abstract

Background: Chronic, recurrent abdominal pain (RAP) is common in children and adolescents where it impacts on everyday life, causes absence from school, and leads to frequent medical consultations.

Aims: to establish to what extent psychosocial factors and negative life events can be identified in children with RAP.

Methods: we investigated 78 children with functional abdominal pain (age 5-14 y). One hundred thirty-one healthy schoolchildren acted as controls. Questionnaires were used for to assess psychological symptoms, negative life events and socioeconomic factors. The psychological assessment comprised 3 clinical scales (Depression, Anxiety and Behavior) totaling 35 items and was answered by the parents. Scores were calculated (separately and totally) and correlated with those of controls.

Results: Family movement, economic difficulties and low socioeconomic status correlated significantly with RAP ($p<0.05$). Children manifested, more frequent anxiety, depression indicative factors (dysthymic depression, attitude derangement) and behavior derangement ($p<0.05$).

Conclusions: Psychological factors, low socioeconomic status, family movement and severe economic difficulties were found significantly more frequently in children with functional abdominal pain and may well influence symptoms expression in childhood.

Introduction

Recurrent abdominal pain (RAP) was defined by Apley and Naish as 3 or more bouts of pain, severe enough to affect activities, occurring over a period of not less than 3 months [1]. In some children the pain occurs daily, and in others it is episodic. Functional gastrointestinal disorders are defined as conditions in which a variable combination of chronic or recurrent gastrointestinal symptoms is present in the absence of any readily identifiable structural or biochemical abnormality [2]. Functional RAP are divided in to two groups; the first includes those in whom there is a pattern to the symptoms (e.g. irritable bowel syndrome, non-ulcer dyspepsia) and the second group includes those in whom no organic disease is demonstrable and in whom there is no recognizable pattern to the symptoms [3,4].

As long ago as the beginning of the last century, Moro [5] stated the most cases of RAP had a psychogenic origin. This was also the conclusion of Apley in the 1950s [6], and other more recent studies [7,8]. However, psychometric testing in recent decades has not given conclusive results concerning a relation between RAP and psychopathological parameters [9].

The aim of this study was to explore psychosocial factors in children with RAP and to compare their expression with a control group of healthy children.

Patients and Methods

We investigated 106 children (52 boys and 54 girls (age range 5-14 y; mean age 8.4 years), referred to the Paediatric Gastroenterology unit at the Hippocration Hospital in Thessaloniki, Greece, that met the criteria of RAP, as outlined by Apley and Naish [1]. One hundred thirty-one healthy schoolchildren (age range 6-14 y; mean age, 9.98 y) volunteered as control subjects.

Thorough physical examination and standardized laboratory evaluation was done in order to exclude the possibility of underlying organic disease. Laboratory evaluation included complete blood count, erythrocyte sedimentation rate, urinalysis and biochemical profile including aminotransferases, serum glucose, serum pancreatic amylase, ferritin, folate, albumin and immunoglobulin (Ig) *E. Antibodies* to *H. pylori*, coeliac screen, urinalysis, stool analysis and abdominal ultrasound were also performed. Children with symptoms indicative dyspepsia, peptic ulcer, gastroesophageal reflux, lactose malabsorbtion or inflammatory bowel disease were investigated appropriately, including upper gastrointestinal endoscopy with antral and corporeal biopsy specimens for rapid urease test, ambulatory pH-monitoring, barium radiographic investigation of the small intestine and breath hydrogen tests.

Subjects who had normal laboratory tests were further investigated for psychosocial factors. For this reason a special questionnaire was

Social Factors
Social family problems (family with one parent, parents divorcement, death of a parent, family member with severe health problem, parents profession and education)
Financial problems in the family (mean income of the family, financial requirements)
Family move to other location in the last 3 years
Stressful life events (death, severe injury, severe illness etc. in a family member)
School absenteeism
History of sexual abuse

Table 1: Part 1 of the questionnaire-environmental and social factors.

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Psychological Factors			
Questions about anxiety	**Never**	**Sometimes**	**Frequent**
Your child enjoys visits to doctors and hospitals (he/she likes these visits)			
Your child is confused at the present of many people (such as in a bus or in a shpopping center)			
Your child has excessive suspense for homework, school lessons, school			
Your child fears that something bad will happen to him/her (such as car accident)			
Your child feels in difficult position in the cases of your absence (he/she feels unhappy, requires reasons to be with you even it knows that is not permitted)			
Your child has anxiety about his/her parents' health (he/she fears for accidents or disorder)			
Questions about depression indicative factors (dysthymia, attidute derangement)			
Your child has sleep problems (difficulties in falling asleep; wakes at night or very early in the morning)			
Your child feels guilty and it is ready to ask for excuse (does it feel bad when it makes somthing wrong? –Does it ask for excuse?)			
Your child crys for insignificant reasons or without visible cause			
Your child has concentration difficulties with homework or other tasks (crys without significant reasons)?			
Your child says he/she feels tired and wants to rest (do you feel that this is an excuse?)			
Your child complains of tummy pain or other symptoms such as headache, palpitations, joint pain or dizziness etc.)			
Do you have difficulties in understanding what he/she thinks and feels			
Your child has no friends or it avoids contact with friends on occasions			
Your child is inattentive or daydreams			
Your child complains that you don' t love him/her or that you don't understand him/her			
Your child forgets tasks like homework or fails to follow instructions			
Your child feels worthless and inefficient ("I cant shop, study, or do my homework")			
Your child fears or overreacts to specific items or situations (his reaction is unusual)			
Your child frequently misses school			
Your child has has difficulty in making decisions			
Your child overreacts if you scold or penalize him/her			
Questions about behavior			
Your child has problems with his/her teachers			
Your child quarrels with his school-friends			
Your child interferes in an aggravating way in the conversations of adults			
Your child has frequent accidents or injuries			
Your child is undisciplined or fails to observe set limits			
Does your child miss school without to informing you?			
Does your child takes items that belong to other children			
Does your child steal money from your home (such as your wallet)? Does your child take items without informing you?			
Is your child aggressive in words or actions?			
Is your child overactive-can' t stay in one place?			
Is your child a fussy eater?			
Does your child find excuses to avoid his/her homework			
Does your child find excuses to avoid going to school?			

Table 2: Part 2 of the questionnaire-Psychological factors.

created by our psychology pediatric department.

The questionnaire consisted of two parts: in the 1st part (Table 1) emphasis was given to environmental and social causative factors, in the 2nd part of the questionnaire (Table 2) psychological factors which could affect the child were investigated (anxiety, depression (dysthymia, attitude derangement), and behavior).

Patients were interviewed with their parents, to help give more reliable answers. In the questionnaire frequency of school absenteeism, family movement, stressful live events and economic or social difficulties in the family were registered.

Psychological Factors

The second part of the questionnaire comprised 3 clinical scales, totalling 35 items. The clinical scales are: Depression scale (D), Anxiety scale (ANX), and Behavior scale (BEH). Sixteen items referred to depression indicative factors (dysthymia, attitude derangement), 6 items to anxiety and 13 items referred to behavior. The questionnaire was answered by one of the patient-parents, preferably by the mother and was completed two times for each child from a different investigator and in a different time. The mean of the score was recorded for each question. In the case, which the answer was strongly or weakly positive, the item scored with 1 point and if negative answer was given the item scored with null points. The 131 control subjects and their parents also answered the same questionnaire.

Scores for every clinical scale for each patient and for each control were registered separately. The total score for the patients and controls were also calculated. Total score of each clinical scale in children with RAP correlated with those of the controls. Total score of all clinical scales in patients correlated also with that of the controls.

Statistical Analysis

Mean values ± SD are given if not otherwise stated. Chi squared test was used for proportions comparison between the various subgroups.

P<0.05 was chosen as the level of statistical significance. All statistic calculations and graphic designs were performed using commercially available software (Graph Pad Software Inc., San Diego, CA, USA).

Results

Underlying organic conditions were found in 28 children (26.4%) (Table 3). Seventy-eight children had no evidence of organic cause of their problem and were eligible for the study.

Social and environmental factors

Four children (5.1%) out of 78 with RAP, had moved with their families to another location within the past 3 years whereas this fact was less frequent (1.5%) in control subjects (p<0.05), (Table 4). Twenty-four of the patient's families (30.8%) had experienced severe economic difficulties this fact was more frequent as in the in control group (17.6%), (p=0.039). Socioeconomic status of the patient-families was low to moderate in 69 cases (88.5%) and high in the rest 9 (11.5%), whereas in families of control subjects socioeconomic status were high in 27.5% (p=0.0086) (Table 4). Parent's educational status did not differ significantly between groups (76.9% with low to medium education vs 80.9% in the control group) (p>0.05).

Three children (3.8%) of the patients group had a family member with severe health problem; a similar frequency (3%) was noted in control group (p>0.05). Single parent families due to parental separation, death or divorce) was similar in both groups (2 cases (2.6%) in RAP patients and 1 case (0.76%) in controls (p>0.05), (Table 4).

Psychological factors

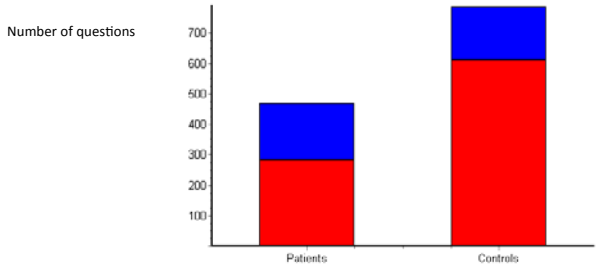
Patients with RAP had in total more frequent anxiety (p<0.05), depression indicative factors (dysthymia, attitude derangement) (p<0.05) and behavior derangement (p<0.05) as the controls (Table 5 and Figures 1-3). From the 6 items that referred to anxiety, 3 differed statistically significant between the two groups. From the 16 items that referred to depression scale (dysthymia, attitude derangement) 9 differed statistically significant between the two groups (Table 5). In the behavior scale 9 of the 13 items considered statistically significant with part of them to differ extremely significant between the 2 groups (Table 5 and Figures 1-3).

Cause	Number of children (n)
Constipation	9
Amebiasis	2
Oxyuriasis	2
Lactose intolerance	1
Cow' s milk allergy	1
Celiac disease	1
Inflammatory Bowel disease	1
Reflux oesophagitis	3
Gastritis	4
Duodenal ulcer	2
Hiatal Hernia	2
TOTAL	28

Table 3: Organic causes in 28 children with RAP.

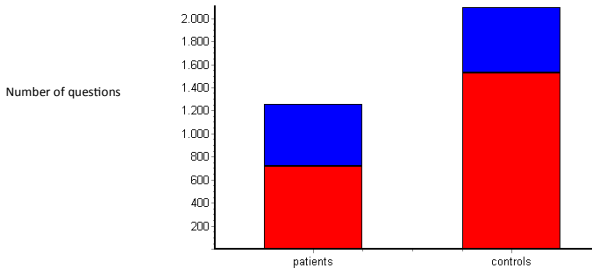
	Patients n (%)	Controls n (%)	p
Low or moderate socioeconomic status	69 (88.5)	(27.5)	0.0086
Family with severe economic difficulties	24 (30.8)	(17.6)	0.039
Moved house in the last 3 years	(5.1)	(1.5)	<0.05
Poor parental education	(76.9)	(80.9)	NS
Singe parent family	2 (2.6)	1 (0.76)	NS
Family member with severe health problem	(3.8)	(3.0)	NS

Table 4: Socioeconomic factors in children with RAP- correlation with controls.



- Positive answers –blue area
- Negative answers – red area

Figure 1: Anxiety in children with RAP (38.67%) -correlation with controls (20.48%), (p<0.05).



- Positive answers–blue area
- Negative answer–red area

Figure 2: Dysthymia, attidute derangement (depressions indicative manifestations) in patients (43.91%) and controls (27.09%), (p<0.05).

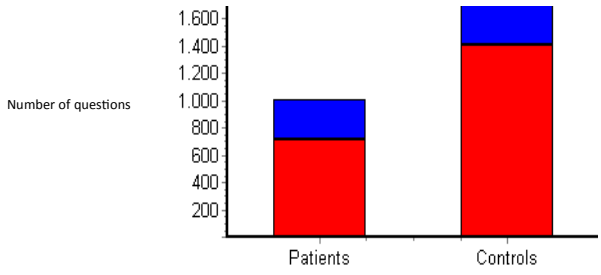


Figure 3: Behavior derangement in patients (29.68%) and controls (17.14%), (p<0.05).

Discussion

Psychosomatic disorders are typically defined as these in which psychological factors are thought to contribute significantly to the development, exacerbation or maintenance of the illness [10]. A number of investigations have found a significant association

	Patients (n=78)	Controls (n=131)	p
Anxiety (6 items/–questions (Total items/questions)	468	786	
Positive answers	181 (38.67%)	161 (20.48%)	<0.0001
Negative answers	287	625	
Depression (16 items/questions) (Total items/questions)	1248	2096	
Positive answers	548 (43.91%)	568 (27.09%)	<0.0001
Negative answers	708	1528	
Behavior derangement (13 items/ questions) (Total items/questions)	1014	1703	
Positive answers	301 (29.68%)	292 (17.14%)	<0.0001
Negative answers	713	1411	

Table 5: Correlation of psychological factors–anxiety, behavior derangement, depression in patients and controls.

between stressful life events and somatic symptoms in adolescents [11]. Other studies have found that higher stress predicted symptom maintenance in adolescent patients with recurrent abdominal pain [12-16]. Olafsdottir et al. investigated 25 consecutive children with RAP [17]; ten children (40%) were harassed at school and 12 (48%) were frequently absent from school because of pain. Ten children (40%) had moved with their families to another location within the past 5 years and seven children (28%) had experienced severe disease or social and economic difficulties in the family.

In our study school absenteeism was seen in 25.6 %. Five percent of children had moved with their families to another location in the past 3 years in compared with 1.5% of controls ($p<0.05$). Similarly, severe family economic problems were more common in children with RAP compared with control subjects (30.8% vs 17.6%). On the other hand, frequency adverse factors such as parent's education, family member with severe health problem and single parent families, were similar in both groups.

Psychological factors

Various studies refer to anxiety as an important factor for symptom expression in RAP [18,19]. It is known that adults with functional dyspepsia have higher levels of state-trait anxiety, depression and neuroticism than patients with duodenal ulcers and healthy controls [20]. Olafsdottir et al, [17] compared psychological factors in a group of 25 children (aged 7-13 y) with RAP without organic disease, with a control group. A tendency for high scores, but within the normal range, was found for depression, anxiety and withdrawal in the RAP group compared with the Personality Inventory for Children.

Stordal et al. [16] who studied 44 children with RAP, referred that parents of the children completed a Child Behavior Checklist for externalizing and internalizing behavior problems. The total scores were in the normal limits for 89% of the children.

It is remarkable that they showed organic abnormalities in 20 out of 44 children with RAP.

In our study we found organic abnormalities in 28 out of 106 children with RAP.

The remained 78 children defined to have functional RAP and found to suffer more frequent (in totally) from anxiety, depression and behavior derangement as healthy controls. Moreover from the 6 items that referred to anxiety, 3 differed statistically significant between the patient and control group. From the 16 items that referred to depression scale, 9 differed statistically significant between the two groups. In the behavior scale 9 out of 13 items considered statistically significant, with part of them to differ significant between the two groups.

Our study shows that psychological factors are more frequent in children with RAP and this is in accordance with similar studies in adult population with functional dyspepsia [20]. The above two studies in children with RAP [16,17], failed to show a strong relation between RAP and psychological factors. This could be attributed to the fact that the first one had a relative small size of study population and the second also included children with non-functional RAP.

Overall, we conclude that factors such family movement, lower family socioeconomic status, family economic problems and psychological factors are associated with symptoms expression in children with functional RAP. More studies are necessary in the future to confirm these findings.

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