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PSYCHIATRIC SYMPTOMS AND ALEXITHYMIA IN CHILDREN AND ADOLESCENTS WITH NON-ORGANIC PAIN: A CONTROLLED STUDY

Aslıhan SAYIN[1], Okşan DERİNÖZ[2], Şahin BODUR[3], Selahattin ŞENOL[3], Şahnur ŞENER[3]

ABSTRACT

Purpose: Pain without an organic cause may be the result of many psychiatric disorders and difficulties in social, educational, and relational life areas for children and adolescents. The aim of this study was to determine the effects of alexithymia on pain without an organic cause and psychiatric symptoms in children and adolescents.

Methods: Fifteen patients with depression, 21 patients with complaints of pain, and 15 controls, all age and sex matched, were evaluated and compared for alexithymia, depression, and anxiety rated by the Toronto Alexithymia Scale (TAS), Beck Depression Inventory (BDI), and State-Trait Anxiety Inventory for Children (STAIC).

Results: Although the lowest mean TAS score was in the control group (9.3±2.8) and the highest grade was in the pain group (11.2±4.0), there was no statistically significant difference between the groups ($p>0.05$). The three groups did not significantly differ with regard to anxiety levels, but depression level was significantly higher in the depression group (18.0±10.8) than in both the pain (9.6±7.0) and control (9.0±2.8) groups ($p=0.005$). In the pain group, alexithymia scores were significantly ($p<0.01$) and positively ($r=0.433$ and 0.435, respectively) correlated with STAIC-I and STAIC-II scores. In a multiple regression model for alexithymia scores in the depression and pain groups, none of the socio-demographic factors significantly affected the TAS scores ($p>0.05$).

Conclusions: This study shows that children and adolescents with non-organic headache/abdominal pain are not significantly more alexithymic than depression patients and controls. Anxiety may be a risk factor for the development of pain without an organic cause in alexithymic children and adolescents.

Key Words: Alexithymia, Pain, Depression, Anxiety, Childhood, Adolescent.

ORGANİK KÖKENLİ OLMAYAN AĞRISI OLAN ÇOCUK VE ERGENLERDE PSİKİYATRİK BELİRTİLER VE ALEKSİTİMİ: KONTROLLÜ BİR ÇALIŞMA

ÖZ

Amaç: Çocuk ve ergenlerde organik bir neden saptanamayan ağrı, bir çok psikiyatrik bozukluktan, sosyal ilişkilerde yaşanan zorluklardan, akademik ve diğer yaşam güçlüklerinden kaynaklanabilir. Bu çalışmanın amacı, aleksitiminin çocukluk ve ergenlik çağındaki organik neden saptanamayan ağrı ve psikiyatrik belirtiler üzerindeki etkisini araştırmaktır.

Gereç ve Yöntem: Yaş grubu 7-17 arasında olan, yaş ve cinsiyet açısından eşleştirilmiş 15 major depresyonu olan hastaya, 15 organik neden saptanamayan ağrı şikayeti olan hastaya, ve 15 kişilik kontrol grubuna Toronto Aleksitimi Skalası (TAS), Beck Depresyon Envanteri (BDE) ve Durumluk-Sürekli Kaygı Ölçeği (DSKÖ) verilerek, üç grup arasında aleksitimi düzeyi, depresyon ve anksiyete açısında fark olup olmadığına bakılmıştır.

Bulgular: TAS skoru kontrol grubunda en düşük (9.3±2.8), ağrı grubunda en yüksek (11.2±4.0) olmakla birlikte, gruplar arasında istatistiksel olarak anlamlı fark yoktu ($p>0.05$). Anksiyete düzeyleri açısından üç grup arasında istatistiksel olarak anlamlı fark yoktu, fakat depresyon düzeyi depresyon grubunda (18.0±10.8), ağrı (9.6±7.0) ve kontrol grubuna (9.0±2.8) göre istatistiksel olarak anlamlı derecede yüksekti ($p=0.005$). Ağrı grubunda, aleksitimi skorları DSKÖ skorları ile anlamlı ölçüde ($p<0.01$) ve pozitif olarak (sırasıyla $r=.433$ ve .435) koreleydi. Depresyon ve ağrı gruplarının aleksitimi skorları için uygulanan çoklu regresyon modelinde, sosyo-demografik etkenlerin hiç biri TAS skorlarını anlamlı olarak etkilememekteydi ($p>0.05$). Sonuç: Bu çalışma organik bir neden saptanamayan baş/karın ağrısı olan çocuk ve ergenlerin, organik bir hastalığı olan çocuklar ve major depresyon hastalarından daha fazla aleksitimik olmadıklarını göstermektedir. Aleksitimik çocuk ve ergenlerde anksiyete, organik nedeni olamyan ağrının gelişimi açısından bir risk etkeni olabilir.

Anahtar Kelimeler: Aleksitimi, Ağrı, Depresyon, Anksiyete, Çocukluk Çağı, Ergenlik Çağı.

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Department of [1]Psychiatry, [2]Paediatrics, [3]Child and Adolescent Psychiatry, Gazi University Faculty of Medicine

INTRODUCTION:

Somatic complaints, especially pain from different locations without a significant organic etiology, are known to be a result of psychiatric problems. For children and adolescents, the prevalence of headaches and abdominal pain is reported to be as high as 10%-30% and 10%-25%, respectively (1). Chronic pain of unknown origin seems to be a risk factor for impairment of multiple domains of daily life in children (2). Difficulties in social relationships, educational and other life stresses, physical and psychological illness in the family, and a tendency to dissociate the connection between physical and psychological experiences have been reported as risk factors for somatisation in childhood (3). Parental factors often associated with pain in children and adolescents are parental rewarding of pain behavior (4) and the role model of a parent who suffers from chronic pain (5). Localization of pain seems to be an important predictor of comorbid psychological problems; abdominal pain and headache might be more strongly related to psychological stressors (6-8), with musculoskeletal pain (e.g., knee pain) being the result of a more specific disease or trauma (9, 10).

Alexithymia is defined as 'the lack of having words for feeling' or 'a personality style that shows deficits in the subjective awareness and cognitive processing of affect' (11). It may cause difficulty in identifying and describing feelings and bodily sensations of emotional arousal and cause an externally oriented thinking (i.e. a cognitive style depicting preferences for external details of everyday life rather than more introspective or imaginative feelings, fantasies, and abstract thinking). An inability to verbalize feelings may cause the expression of distress through 'body talk', thus leading to somatic symptoms without an organic cause. Alexithymia in adults has been well studied and, as a disorder of affect regulation, has been found to be related to many psychiatric disorders like depression, panic disorder and social phobia, substance abuse, somatoform disorders, eating disorders, dissociative disorders, and post-traumatic stress disorder (12-15). Childhood physical and sexual abuse (16, 17), maternal neglect (18), and reduced social support (19) may contribute to alexithymia in adults.

Alexithymia in children and adolescents has not been widely studied. Data that come from case reports (20) and preliminary studies suggest that alexithymia in childhood may be a risk factor for developing somatisation (3), and adolescent alexithymia is associated with diminished family expressiveness and lack of emotional security in childhood (21). In this study, we examined the association between pain without a significant organic cause and alexithymia, depression, and anxiety in children and adolescents. We tested the following hypotheses: (1) most children and adolescents who have pain without an organic cause are alexithymic, (2) depression and anxiety levels may be correlated with alexithymia in patients with non-organic pain.

MATERIALS and METHODS:

Study design:

This was a cross-sectional study, in a university hospital setting, designed with the cooperation of two departments: Pediatric Department and Child and Adolescent Psychiatry Department of Gazi University Hospital in Ankara, the capital of Turkey.

Study population:

Children and adolescents, aged between 7 and 17 admitted to one of the two departments during January-May 2004 consecutively were chosen as the study population and divided into 3 groups for study purposes. The aim of the study was briefly explained to the parents of these children and adolescents, and consent was obtained for their participation.

Group 1: This group was chosen among children and adolescents admitted to the Child and Adolescent Psychiatry Department of Gazi University Hospital consecutively during January-May 2004. Children and adolescents diagnosed with depression by a semi-structured clinical interview using DSM-IV-TR diagnostic criteria were chosen for the study. Fifteen patients who did not meet the exclusion criteria were further evaluated with the following instruments. Exclusion criteria for this group were being younger than 7 and older than 17 years old, being non-literate, and mental retardation.

Group 2: Patients admitted to the Pediatric Neurology and Gastroenterology outpatient clinics of Gazi University with complaints of headache and stomach ache during January-May 2004 were evaluated for an organic etiology using necessary laboratory tests and imaging techniques (e.g., total blood cell count, liver and kidney functions, brain computerized tomog-

Table 1: Socio-demographic features of the depression and pain groups.

	Depression group (n=15)		Pain group (n=21)	
	N	%	N	%
Gender				
Female	7	46.7	14	66.7
Male	8	53.3	7	33.3
Mothers' educational status				
Primary school	5	33.3	7	33.3
High school	8	53.3	6	28.6
University/postgraduate	2	13.3	8	38.1
Mothers' occupational status				
Housewife				
Working	12	80.0	11	52.4
Retired	3	20.0	9	42.9
	0	0	1	4.8
Fathers' educational status				
Primary school	0	0	1	4.8
High school	9	60.0	10	47.6
University/postgraduate	6	40.0	10	47.6
Fathers' occupational status				
Unemployed	1	6.7	0	0
Working	11	73.3	18	85.7
Retired	3	20.0	3	14.3
Economic status of family				
Low	1	6.7	2	9.5
Medium	14	93.3	19	90.5
High	0	0	0	0
Number of siblings				
Only child	2	13.3	4	19.0
2-5	12	80.0	17	81.0
6 or more	1	6.7	0	0
Which one of the siblings				
First child	9	60.0	10	47.6
Middle child	5	33.3	9	42.9
Youngest child	1	6.7	2	9.5
Pain				
No	8	53.3	21	100
Yes	7	46.7	0	0
Organic illness				
No	14	93.3	15	71.4
Yes	1	6.7	6	28.6

Table 2: Comparison of z scores of Toronto Alexithymia Scale (TAS), State Anxiety Inventory for Children (STAIC-I), Trait Anxiety Inventory for Children (STAIC-II), and Beck Depression Inventory (BDI) between the three groups.

Scale	Depression (n=15)	Pain (n=21)	Control (n=15)	P
TAS	-.24	-.28	.17	0.3
STAI-I	-.16	.25	-.42	0.1
STAI-II	.35	-.12	.13	0.1
BDI	.83	.42	.35	0.005*

*: Statistically significant for p<0.05

Table 3: Pearson's correlations of z scores of STAI-I, STAI-II, BDI, and TAS.

Correlation Coefficients			
	TAS	STAI-I	STAI-II
Depression group			
TAS			
STAI-I	.221		
STAI-II	-.174	.744**	
BDI	.242	.572*	.711*
Pain group			
TAS			
STAI-I	.433*		
STAI-II	.435*	.696**	
BDI	.200	.716**	.636*
Control group			
TAS			
STAI-I	.491		
STAI-II	.505	.812**	
BDI	.738**	.779**	.758**

*: significant for p<0.05 (2-tailed), **: significant for p<0.01 (2-tailed)

raphy, and abdominal USG) and patients without an organic etiology were referred to the Child and Adolescent Psychiatry outpatient clinic. Among these patients, 21 of them who did not meet the exclusion criteria were chosen, interviewed for a current or previous psychiatric diagnosis by using diagnostic criteria for DSM-IV-TR psychiatric disorders, and further evaluated with the following instruments. Exclusion criteria for this group were being younger than 7 and older than 17 years old, being non-literate, and having a current or previous psychiatric disorder.

Group 3: Fifteen patients who were hospitalized in the Pediatric Inpatient Clinic during January-May 2004 and who did not meet the exclusion criteria were chosen for this group. Exclusion criteria for this group were being younger than 7 and older than 17 years old, being non-literate, having a current or previous psychiatric disorder measured using diagnostic criteria for DSM-IV-TR psychiatric disorders, and having current headache or abdominal pain.

Questionnaires for the patients:

Socio-demographic information questionnaire: This 14-item questionnaire was specially designed for this study by the authors. Questions about patients' names, file number, date of birth, gender, age of mother and father, occupational and educational status of mother and father, socio-economic status of the family, and number of siblings were answered by patients with the help of their parents. The last question was about pain and was answered by the clinician who examined the patients. The clinician was asked to fill out the information about pain: localization, type, severity, duration, any kind of physical illness or psychological stress at onset of pain, accompanying bodily symptoms (e.g., relationship with menstrual cycles, fatigue, and multiple pain), and any organic disease diagnosed after specific tests and physical examination.

Toronto Alexithymia Scale (TAS): This is a 26-itemed scale, specially designed for the evaluation of alexithymia in patients and the normal population (22, 23). The patient answers 'yes' or 'no' for each item and higher scores mean a higher level of alexithymia, with a cut-off point of 11. The validity and reliability of this scale for the Turkish population were confirmed previously (24). Its validity and reliability for children and adolescents have not been tested, but since there

Table 4: Multiple linear regression model of alexithymia (TAS) z scores for the depression and pain groups.

	Coefficients (B)	Significance (P)
Sex (male/female)	0.11	0.7
Age(<13/ >13)	0.13	0.8
Maternal age (>40/ <40)	0.12	0.8
Maternal education (high school/university)	0.45	0.7
Maternal occupation (working/not working)	-0.42	0.4
Paternal age (>40/ <40)	0.56	0.2
Paternal education (high school/university)	-0.31	0.3
Paternal occupation (working/not working)	0.67	0.2
Monthly income of the family (low/ average)	1.14	0.1
Number of siblings (<3/ >3)	-0.18	0.9

was no other instrument available for pain in this population, we used this scale for our study.

Beck Depression Inventory (BDI): This questionnaire is a 21-item self-report measure (25). Each item has 4 options, scored from 0 to 3 with respect to mild to severe depressive symptoms. Beck's Depression Inventory has been adapted for the Turkish population (26). In this study, for children under 12 years of age, a specialized form of BDI for this age group was used. This specialized form is still a self-report and consists of 21 questions, but some statements are simplified so that children under 12 years of age can understand the question more easily. The validity and reliability of this specialized form were tested for the Turkish population (27).

State-Trait Anxiety Inventory (STAI): STAI is a 40-item self-report measure. It is made up of two forms: Trait (I) and State (II). It is a 4-point Likert-type scale ranging from 1 (never) to 4 (always). High scores indicate high anxiety (28). STAI has been adapted for the Turkish population (29). In this study, for children under 12 years of age, a specialized form of STAI for this age group (STAIC) was used, which has also been adapted for the Turkish population (30). This specialized form is still a self-report and consists of 40 questions, but again some statements are simplified so that children under 12 years of age can understand the question more easily.

Statistical analysis:

The data were analyzed using SPSS 11.0. For standardization of TAS, STAI-I, STAI-II, and BDI scores between subjects under and above 12 years of age, scores were converted into standard z scores and all the statistical tests were performed using these z scores. One-way ANOVA was used to test the differences of mean scores between the three groups. The correlations of TAS scores with STAI-I and II and BDI scores were assessed using Pearson's correlations. A t-test for independent samples was used to test the socio-demographic features' differences in mean scores. Exploratory analysis, including all these possible factors, was performed using multiple linear regression analysis with enter modeling. A p value smaller than 0.05 was considered statistically significant.

RESULTS

Fifteen patients from Group 1 (depression), 21 patients from Group 2 (pain), and 15 patients from Group 3 (control) completed the study. Socio-demographic features of the depression and pain groups are shown in Table 1. Between the depression and pain groups, there were no statistically significant ($p<0.05$) sex differences (7 females and 8 males in the depression group, 14 females and 7 males in pain group, $p=0.4$). Mean ages for each group were as follows: 12.5±2.6 for the depression group, 14.4±2.6 for the pain group, and 12.4±2.4 for the control group. For a p value less than 0.05, there were no statistically significant differences between the groups in terms of age ($p=0.09$).

The mean scores of TAS, STAI, and BDI for each group are shown in Table 2. For TAS, the lowest grade was in the control group (9.3±2.8), and the highest grade was in the pain group (11.2±4.0), but there were no statistically significant ($p=0.3$) differences between the three groups ($p=0.3$). For STAI, the control group had the lowest scores from both state and trait anxiety (36.7±11.2 and 35.9±11.5, respectively), and the depression group had the highest scores from both (45.3±13.2 and 43.8±16.3, respectively), but the difference between the three groups was not statistically significant ($p=0.1$). The only significant difference between the groups in the means of the psychometric scales was for BDI, since depression scores in the depression group were significantly higher than those in the other two groups (18.0±10.8, 9.6±7.0, and 9.0±2.8, respectively; $p=0.005$).

Pearson's correlations of STAIC-I, STAIC-II, BDI, and TAS scores are shown in Table 3. For all three groups, scores of STAIC-I, STAIC-II, and BDI were significantly ($p<0.05$) and positively correlated with each other. In the depression

group, alexithymia scores were not significantly correlated with depression or anxiety scores (p=0.4, 0.5, and 0.3, respectively). In the pain group, alexithymia scores were significantly (p=0.05 and 0.04) and positively (r=0.433 and 0.435) correlated with state and trait anxiety scores, but this correlation was not significant for depression scores (r=0.200, p=0.3). In the control group, alexithymia scores were significantly (p=0.002) and positively (r=0.738) correlated with depression scores, but this correlation was not significant for state and trait anxiety scores (r=0.491 and 0.505, p=0.06 and 0.05).

We also analyzed the effects of some socio-demographic features of the depression and pain groups on their alexithymia scores. We formed a multiple-regression model for possible risk factors and the results are summarized in Table 4. For this multiple linear regression model of alexithymia, none of the risk factors significantly affected the alexithymia levels in the depression or pain groups (p>0.05).

DISCUSSION:

This is a preliminary study, comparing age- and sex-matched children and adolescents, grouped under three headings: depression, pain without an organic cause, and controls. Our hypothesis was that most of the children and adolescents who have pain without an organic cause are alexithymic. Evidence from previous research suggests that anxiety, depression, neuroticism, and alexithymia may have an influence on somatizing states (31). We had expected that since alexithymic people are incapable of verbalizing their inner conflicts and problems, and they may use 'body talk' like pains from different localizations, but this hypothesis was not proved in our study, because there was no statistically significant difference with regard to alexithymia between the three groups.

Bodily pain in children and adolescents, including headaches, abdominal pain, and low back pain, is found to be strongly associated with emotional and psychological problems (32-36), and seems to be a predictor of psychiatric problems when they grow up (37). In our sample, pain without an organic cause group did not show any significant difference with regard to depression or anxiety levels. The only significant difference was for BDI scores in the depression group, which is not surprisingly highest.

The most important result of this study was that in the pain group alexithymia scores were significantly and positively correlated with anxiety scores, but not with depression scores. This result shows that alexithymia level in children and adolescents with non-organic pain is positively affected by anxiety level. This result is further supported by the result that alexithymia level was not affected by anxiety level in the depression or control groups. Thus, anxiety may be a risk factor for the development of pain without an organic cause in alexithymic children and adolescents. It has been stated that alexithymia was only moderately correlated with depression and anxiety (38). However, in another study conducted on psychiatric outpatients in Turkey, state and trait anxiety were found to be closely related to alexithymia (39).

To our knowledge, this is the first study designed for children and adolescents to investigate the relationship of pain with alexithymia and psychiatric symptoms in Turkey. In another study from Turkey, the TAS was used in an adolescent population who had committed suicide, and the results showed that there was no statistically significant difference with regard to alexithymia between adolescents who had committed suicide and normal controls (40). Another study from Turkey, which had also used the same scale, found that alexithymic adolescents were prone to dissociation when compared to their non-alexithymic peers (41). All other studies using the TAS in Turkey have been conducted for adult patients with different sorts of psychiatric disorders. For example, patients with alcohol dependence (42), conversion disorder (43), and depression (44) were found to be more alexithymic than normal controls. Studies conducted to determine whether there is a relationship between alexithymia and some psychosomatic disorders like fibromyalgia and irritable colon syndrome have also been performed in Turkish populations and they found that patients with both disorders had significantly higher scores of alexithymia than normal controls (40, 45), while patients with mastalgia without an organic cause were not more alexithymic than healthy controls (46). Alopecia areata patients had significantly higher alexithymia scores than normal controls (47).

Our study has some major limitations. First, our study group was relatively small. Second, we used children and adolescents with some organic diseases as a control group. Although they were age and sex matched with both the pain and depression groups and they had neither previous or current psychiatric disorder nor pain without an organic cause, the results would have been more reliable if the control group had been chosen among healthy children and adolescents. Third, we used the TAS, for which no reliability or validity data for this age group in Turkey are available, to measure alexithymia, since there was no other suitable scale for this purpose. These limitations may be reasons for our failure to confirm our hypothesis that alexithymia is a common feature in patients who have pain without an organic cause.

Despite these limitations, we think that this study is of importance, since it contributes some important points to the literature about alexithymia. Physical symptoms account for the majority of consultations in primary and secondary care settings and at least one-third of symptoms in primary care are medically unexplained (31). Pain can be both a reason and a source of stress for children and adolescents. It can be an indirect expression of psychological difficulties, especially for those who are prone to be alexithymic. Moreover, pain itself may lead to functional impairment in academic and social areas for children and adolescents, which may cause anxiety in both patients and families. At the same time, it may even cause major psychiatric disorders like depression, anxiety disorders, or somatoform disorders. For these reasons, we think that understanding the psychological causes of non-organic pain in children and adolescents is extremely important. Although our results are preliminary and cannot be generalized to the whole population of children and adolescents with non-organic pain,

we think that our study will enrich the limited literature about alexithymia and psychiatric symptoms in children and adolescents.

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Correspondence Address
Aslıhan Sayın
Gazi University Medical Faculty
Department of Psychiatry Beşevler 06450, Ankara, TURKEY
Telephone number: 0090 312 2025415
Fax number: 0090 312 4674827
E mail: aslihansayin@yahoo.com

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