Correlates of Depression in New Onset Pediatric Inflammatory Bowel Disease

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ABSTRACT: Of thirty six children with new-onset inflammatory bowel disease given a Kiddie-SADS interview, five children were depressed and ten had some depressive symptoms. Depressed children had less severe illness, and were more likely to have a maternal history of depression, more life events, and families characterized by less cohesion and more conflict.

KEY WORDS: depression, Crohn's Disease, ulcerative colitis, psychosocial

Inflammatory bowel disease (IBD) comprises two principal idiopathic forms: Crohn's disease and ulcerative colitis. In Crohn's disease inflammation is transmural and may affect any part of the gastrointestinal tract, whereas the hallmark of ulcerative colitis is inflammation which is limited to the mucosa and superficial submucosa of the large bowel. Although they can be distinguished on clinical grounds, it is not certain that the two conditions are fundamentally distinct.[1] The etiology of IBD is unknown, and while evidence suggests the initial pathogenic events are partly or wholly different, they likely share important pathophysiologic processes.[1]

The role of psychological factors in inflammatory bowel disease remains unclear, despite a long history of interest by psychiatry.[2] Recent reviews of studies in adults criticize the methodology of earlier research, but find an increased prevalence of depression in Crohn's disease as compared to controls, but not in ulcerative colitis.[2,3,4] In addition, Tarter et al[5] reported an increased prevalence of anxiety disorders in patients with Crohn's disease as compared to normal controls, with the prevalence of panic disorder being increased prior to disease onset. Other research suggests that stress is not a major etiologic factor in initiating disease, but daily stress and major life events appear to be related to disease activity.[3,6,7] The role of stress in the psychopathology related to IBD, however, has not been elucidated. Moreover, no consistent association between psychiatric morbidity and disease severity has been demonstrated.[2]

Cross-sectional studies have shown increased psychopathology, including depression, in children with IBD compared to children with other chronic illnesses.[8,9] But in one study, current or lifetime prevalence of anxiety disorders was no different in IBD than in cystic fibrosis.[8] Recent studies have focused on children with new onset IBD to evaluate life events, family psychiatric history, and family relationships at the outset of psychiatric symptoms early in the disease. This strategy allows concurrent assessment of functioning in a variety of domains in subjects at the same stage of illness. We previously reported preliminary data on 13 children showing that depression was present in some children at the time of diagnosis of IBD,[10] and was significantly associated with life events and maternal depression. Of further interest was the finding that depression was inversely related to illness severity. Szajnberg et al,[11] also reported that 11 of 15 children with new-onset IBD had a psychiatric diagnosis. This included three children who were depressed, and nine who had an anxiety disorder. Moreover, 21 of 27 parents had a psychiatric diagnosis, and 13 mothers showed evidence of insecure attachments. These reports, therefore, provide clues to the interaction of psychosocial and biomedical influences on depression in pediatric IBD. We now extend our previous report[10] by providing data on depression and anxiety in a total of 36 subjects evaluated at the time of diagnosis of IBD. The study tests the hypothesis that depression is inversely related to illness severity, but directly related to maternal depression, life events, and family relationships.

Methods and Procedures

Subjects

The sample consists of 36 children and adolescents (mean age 11.98 years, SD = 2.67) with IBD. Of the 36, 21 subjects had Crohn's disease (mean age 11.76 years, SD = 2.51), and 15 had ulcerative colitis (mean age 11.8 years, SD = 2.81). There were 17 boys (mean age 12.11 years, SD = 2.62), and 19 girls (mean age 11.86 years, SD = 2.77). The median duration of illness before diagnosis was 3.5 months. Eighty percent of parents were married, 91% of mothers had completed high school, and 42% had a least some college education.

Procedure

Subjects were recruited as they presented to the gastroenterology department of Children's Hospital of Pittsburgh and to the private practice of the only other pediatric gastroenterologist serving the Pittsburgh area. Evaluations were conducted within one to two months from the time of diagnosis, with a mean of five weeks. Adolescent subjects and parents gave informed consent before entry into the study. Children under 12 years of age signed an assent form.

The psychiatric evaluation of the child consisted of the Kiddie-SADS-E (the Kiddie Schedule for Affective Disorders and Schizophrenia, Epidemiologic Version)[12] interview, which is a semi-structured interview first given to the parent and then to the child. Depression was diagnosed if sufficient symptoms were present to allow diagnosis without reliance on symptoms which could be symptoms of the illness, e.g., weight loss. Subjects were assigned a diagnosis of atypical depression if they had insufficient symptoms to warrant a diagnosis of major depression. This category also included subjects who may have had an organic mood syndrome or an adjustment disorder, but we found we could not easily make this distinction. Subjects also completed the Family Relationship Index Scale (FRI),[13] a scale consisting of true/false questions assessing family relationships. The FRI gives a score for cohesion, conflict, and expression, and parent and child versions can be used. Adequate internal consistency and test-retest reliability have been reported.

The mother's psychiatric history was obtained using the A-SADS-L (Adult Schedule for Affective Disorders and Schizophrenia, Lifetime Version)[14] interview. One mother could not be evaluated. Mothers also completed the Family Inventory of Life Events (FILE),[15] which gives a score for life events in the preceding year (current total), and a total lifetime score (historical total). They also completed the parent version of the FRI. Too few fathers participated to allow meaningful analysis of data on fathers. The severity of IBD was rated independently by the gastroenterologist blind to the psychiatric evaluation, using the Lloyd-Still and Green Scale,[16] which gives a total score inversely related to severity of illness.

Results

Of the 36 subjects (Table 1), five (14%) were given a diagnosis of major depression. One of the five had depression and dysthymia. An additional 10 (28%) subjects were given a diagnosis of atypical depression. The remaining twenty-one (58%) subjects had no depressive symptoms. The proportion of males and females did not differ significantly among the groups, although four of the five depressed children were male. Two depressed children had Crohn's disease (9.5%) and three had ulcerative colitis (20%). Six of the ten children with atypical depression had Crohn's disease (28.5%) and four had ulcerative colitis (27%). Only one child had depressive symptoms before the onset of their IBD. Two of the ten were depressed, and five were diagnosed with atypical depression.

Ten children were diagnosed with an anxiety disorder: six had separation anxiety, three overanxious disorder, four phobic disorder, and one had panic attacks. In only two cases was the onset of the anxiety

Table 1
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Bowel Disease

	Depressed (N=5)	Atypical Depression (N=10)	Not Depressed (N=21)
Severity IBD (Range 1-100)	90 (less severe)	66	70**
Maternal History of Depression	5	3*	10*
Life Events			
Current Total	17	6*	6**
Historical Total	8	1.5**	2**
Family Relationship			
Index			
Mother			
Cohesion	4.2	7.8**	7.6**
Conflict	6.6	2.5**	2.9**
Expression	5.2	5.7	5.7
Child			
Cohesion	7.4	7.4	7.8
Conflict	3.4	2.6	3.2
Expression	3.6	3.9	4.6

*p<.05; **p<.01.

disorder coincident with the development of their illness. In the case of the other 8 subjects the onset of their anxiety disorder preceded the diagnosis of IBD by a number of years. Three of the 10 had more than one anxiety disorder. One other child had obsessive compulsive disorder; he had severe obsessional thinking and anxiety at the time of diagnosis, and a history of compulsive hand washing which predated his gastrointestinal symptoms.

As a group, the depressed children were significantly less severely ill than the atypical and non-depressed groups combined (Mann-Whitney U, two-tailed test, p = .006). However, the severity scores of the depressed group were not significantly lower than the scores of the atypical depression group, but the difference between the severity scores of the depressed group (median score 90) and the non-depressed group (median score 70) approached significance (Mann-Whitney U, two-tailed test, p = 0.1).

The median duration of illness from time of symptom onset to the time of evaluation was greater for the depressed group (10.1 months) than the atypical depression group (3.3 months) or the non-depressed group (3.5 months), but the difference was not statistically significant.

Eighteen mothers had a life-time history of depression. All mothers of the five depressed children had a history of depression as compared to the mothers of the atypical depression group (5/5 vs 3/9, Fisher's exact test, two-tailed, p = .03), or mothers of the non-depressed group (5/5 vs 10/21, Fisher's exact test, two-tailed, p = .05). Five of the 18 mothers were depressed during the year before their child's IBD was diagnosed. Two mothers of the depressed children were depressed at the time of diagnosis.

Nine mothers had at least one anxiety disorder. Five had phobias, three generalized anxiety disorder, two had panic disorder, and three had obsessive compulsive disorder. However, there were only three cases where a mother and child each had an anxiety disorder.

The median number of current (6) and historical life events (2) for the overall sample were within the norms for the scale. However, the depressed group experienced significantly more current life events than the atypical depression group (17 vs 6, Mann-Whitney U, two tailed test, p = .001), or the non-depressed group (17 vs 6, Mann-Whitney U, two tailed test, p = .001). Moreover, the depressed group experienced significantly more historical life events than the atypical depression group (8 vs 1.5, Mann-Whitney U, two-tailed test, p = .01), or the not depressed group (8 vs 2, Mann-Whitney U, two tailed

test, p = .004). Of the individual FILE categories stresses related to family strains, current marital strains, finances, and work were significantly greater in the depressed group. There were no significant differences between the atypical depression and no depression groups for life events.

Scores from the FRI showed that mothers of the depressed children reported more conflict in their families than mothers in the atypical depression (6.6 vs 2.5, Mann-Whitney U, two-tailed test, p = .002), or no depression (6.6 vs 2.9, Mann-Whitney U, two-tailed test, p = .003) groups. Similarly, they reported less cohesion in their families than the atypical depression group (4.2 vs 7.8, Mann-Whitney U, two-tailed test, p = .01), or the no depression group (4.2 vs 7.6, Mann-Whitney U, two-tailed test, p = .01). The children's reports on conflict and cohesion did not differ among the groups.

Discussion

The present study shows that 15 of 36 children evaluated shortly after the diagnosis of IBD reported symptoms of depression, and of these five had a major depression. Ten children had a history of an anxiety disorder. These results are similar to those of Szajnberg et al[11] who reported that at the time of diagnosis of IBD, 11 of 15 children had DSM-III diagnoses, most commonly separation anxiety and major depression. In contrast, Kovacs et al[17] reported that 12% of children in a prospective study of new-onset juvenile diabetes mellitus met criteria for adjustment disorder with depressed mood three months following initial diagnosis, but only 4% experienced a major depression. The present results, in conjunction with cross-sectional studies,[8,9] suggest, therefore, that children with IBD are at high risk for psychiatric disorder particularly depression and anxiety.

The finding that depressed children were less severely ill than non-depressed children extends our previous report,[10] and differs from findings in the literature to-date. Typically, researchers have reported a lack of association between psychopathology and disease parameters in pediatric IBD,[21,22,23] but depression was not specifically examined in these studies. Moreover, studies which have specifically examined illness characteristics and depression in other pediatric illnesses,[8,19,20] also report a lack of association between depression and disease parameters. In adults with Crohn's disease, Helzer et al[14] found that while depression was more prevalent with more severe

illness, the association was not statistically significant. In a review of psychopathology in IBD in adults, Folks and Kinney[2] noted that severity of gastrointestinal symptoms and psychiatric symptoms were independent. One explanation for the present finding is that our patients were assessed in the early stages of illness: severe illness may be associated with depression later in the course of illness. Moreover, the depressed children in the present study tended to be ill for longer before they were diagnosed as they tended to present with more vague symptoms. McAnarney et al[24] reported more psychological distress in children with less severe rheumatoid arthritis, and suggested that marginal (and less visible) illness imposed a greater social burden on children who were often not physically able to meet expectations. Similar reasoning may apply to our group of patients. Moreover, the depressed children being less severely ill were not treated with prednisone at the time of evaluation, ruling out prednisone as a cause of the depression. A further possibility is that the milder form of IBD observed in our depressed subjects represents a more environmentally induced form of IBD. However, our sample is relatively small, and the effect may not be significant in a larger sample.

The observation that mothers of depressed children were more likely to have a history of depression accords with studies of physically healthy depressed children,[25] as well as studies of medically ill depressed children.[20,26] The present results, furthermore, are an interesting complement to the observation of Szajnberg et al[11] that many mothers of children with IBD had insecure attachments. Engstrom,[27] also reported increased psychological distress in mothers of children with IBD, but maternal distress was not correlated with psychopathology in the child. However, Engstrom measured current distress, and did not specifically examine maternal depression. A history of maternal depression could well be a risk factor with significant implications for the child's (and mother's) ability to cope with the illness.

Depressed children also experienced more life events than the non-depressed group, although life events scores for the overall sample were comparable to the norms for the scale used. The domains identified as discriminating depressed and non-depressed children (i.e., family, marital, financial) are consistent with the literature. Kovacs et al[17] found that marital conflicts were more common in newly diagnosed diabetic children who were given a psychiatric diagnosis. Depressive symptoms were, also, correlated with negative life events in a study of children with cancer,[18] although a cross-lag panel analysis

suggested the relationship was not causal. Kashani, Venzke, and Miller[20] found that significantly more depressed than non-depressed children with orthopedic problems had a history of at least one stressful event. Consistent with these results, mothers of the depressed children in the present study reported increased conflict and reduced cohesion in their families.

Our results most parsimoniously argue that the onset of the illness may have served as an additional stressor overwhelming the coping skills of children predisposed to depression because of their family psychiatric and psychosocial histories. Further studies are needed to explore whether there is a form of IBD which is associated with psychosocial stress and psychiatric morbidity in the children and their families. We are currently exploring the role of familiality of IBD, and family psychiatric history as influences on depression.

Summary

Thirty six children with new-onset inflammatory bowel disease were given a Kiddie-SADS interview. Mothers were given an A-SADS interview. Scales to assess severity of illness, life events, and family functioning were also completed. Five children were depressed, ten had some depressive symptoms, and twenty one had no symptoms of depression. The depressed children had less severe illness, and were more likely to have a maternal history of depression, more life events, and families characterized by less cohesion and more conflict.

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