Research Article

Anxiety Related Determinants for Severity of Depression in Young Girls

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Abstract

Based on former empirical studies and theoretical models the present study investigated, whether stress symptoms, stress coping, and activity of HPA axis is different in girls with major depression compared to nondepressed controls. A main question is the influence of anxiety in combination with coping strategies on severity of depression. 148 girls with a mean age of 15 years were studied twice with 6 months between the two assessments. 74 fulfilled DSM IV criteria for major depression at first assessment. Stress symptoms and stress coping were measured with validated German questionnaires. The cortisol awakening response was analyzed by collecting saliva samples. A diagnosis of an anxiety disorder combined with resignation in stress situations reinforced severity of depression, when physical stress load in form of pain is taken into account. Heightened activity of HPA axis played a significant role. This was also found when passive avoidance was used as a predictor, but not for rumination or lack of seeking social support.

Keywords: Stress; Depression; Stress coping; Girls; anxiety; Cognitive model

Introduction

Depression in children and adolescents is frequent.

In a representative sample from Germany a lifetime prevalence for depression in youth of 21% was found [1].

In Middle East countries 57% of youth have been observed to be depressed [2].

A unique and consistent model for etiology and maintenance of depression in adolescents is not available at present. Therefore reviewed are empirically supported factors that have been proposed by [3] as a basis for explaining depression in adolescents.

Social factors

The risk to develop a psychiatric disorder in general is heightened for children from families with a low socioeconomic status. This has been already shown in a large epidemiological study by [4].

Children from families with a low income had a threefold greater probability to develop a depressive disorder. This has been confirmed in a study by [5].

Factors related to the families of depressed children

The families are characterized by the lack of positive supporting interactions with parents. These may be extremely focusing on conflicts and therefore provoke anger and aggression in children. Such conditions are especially present, when a high degree of parental psychopathology could be identified [6].

The significance of stress for the depressive disorder

A controlled study of [7] showed that psychosocial stressors reinforce the depression and are also more frequent as a consequence of depression.

This has been supported in a study of [8] by a longitudinal analysis.

Inadequate stress coping

Destructive stress coping in adolescents diagnosed as depressed has been found in [9].

The significance of an anxiety disorder and stress coping for depression in youth [10] reported significant influences of an anxiety disorder on depressive symptoms.

The risk of being depressed in early adulthood is strongly determined by an anxiety disorder in adolescence [11].

Older adolescents presented a significant relationship between chronic anxiety and depression [12].

Similar results were obtained by [13] in a large sample.

Neuroendocrine findings

The severity of depressive symptoms is significantly correlated with cortisol levels during a laboratory stressor [14].

A long duration of depression leads to stress related hyperactivity of HPA axis [15].

A dysregulated feedback of cortisol secretion after stress is reported by [16] cortisol does not recover.

A lack of social support results in a high stress level. Stress feelings then promote depression as well as a hyperactivity of HPA axis [17].

The empirical literature shows that depression in adolescents is characterized by a high stress load but on the other hand by inadequate stress coping. In a longitudinal design the present study investigated differences in stress load and stress coping between depressed girls and controls. Differences in activity of HPA axis are also taken into

account. In addition the significance of a co-existing anxiety disorder was explored.

Methods

All Patients were recruited from the Department of child and adolescent psychiatry in a general hospital in Trier and fulfilled DSM IV criteria for major depression which was proved by a structured clinical interview [18]. A control group was recruited by advertisements in the local newspaper.

The study was approved by the ethical committee of the university of Trier (17.2.2010).

All participants were paid for participation.

Patients and controls were assessed twice with a time interval of 6 months between the two measurement points. Table 1.

There were no significant differences between patients and controls with respect to these characteristics.

Questionnaires

The severity of depression was assessed by the Depression Inventory for Children and Adolescents (DIKJ) [19]. The internal consistency of this instrument is 0.92.

Somatic complaints were obtained with the Giessen Complaint Questionnaire for children (GBB) [20]. It comprises the subscales exhaustion, stomach ache, pain in legs, Circulatory problems, and complaints of a cold. Internal consistency of the subscales is 0.80.

Coping strategies

Reactions to stressful situations were obtained by the coping questionnaire for children and adolescents (SVF-KJ) [21]. The questionnaire measures reactions to stress, when a stress situation is imaged. It comprises strategies which reduce stress as well as strategies that enhance stress. 9 subscales are provided. The internal consistency of the subscales is .96.

Stress load

Stress load was assessed by the questionnaire for stress and stress coping for children and adolescents [22].

The subscales comprise 1. vulnerability to stress, 2. physical symptoms of stress such as headache, stomach ache or exhaustion. 3. psychological symptoms of stress such as depressed mood and anxiety.

The test retest reliability of the subscales is between .60 and .82.

All participants collected saliva samples after awakening to determine cortisol.

Results

The depressed girls had a mean value of 19.3 ± 7.5, the controls of 9.7 ± 6.4 on the Depression Scale.

As expected the mean for the depressed girls was significantly higher and indicates clinically relevant depression according to norm-tables for this questionnaire Table 2.

The statistical analysis for comparison between depressed patients and controls with MANOVA for all three scales simultaneously was

Table 1: Description of the sample.

	Major Depression (n=74)	Controls (n=74)
Age (years)	15.7 ± 2.1	15.1 ± 2.4
High school (%)	66	81
Parents academic education %	4	10

Table 2: Mean values for stress load in patients and controls (M ± SD).

Scale of SSKJ	Controls	Major Depression
Stress vulnerability	15.5 ± 3.0	17.7 ± 2.8
Physical stress symptoms	10.1 ± 2.7	11.8 ± 3.0
Psychol. stress load	21.9 ± 5.5	27.6 ± 5.1

Table 3: Mean values for stress coping strategies in patients and controls (M ± SD).

Scales of SVFKJ	Controls	Major Depression
Down playing	17.2 ± 5.4	14.9 ± 5.4
Distraction	11.2 ± 5.5	9.6 ± 5.0
Control of stress	23.2 ± 4.3	19.9 ± 5.9
Positive self-instruction	22.5 ± 5.0	18.0 ± 6.7
Social support	20.4 ± 4.9	18.1 ± 5.9
Passive avoidance	13.8 ± 6.3	19.0 ± 7.1
Rumination	17.9 ± 6.1	21.5 ± 7.0
Resignation	8.5 ± 5.8	13.7 ± 7.5
Aggression	11.7 ± 6.4	15.6 ± 6.9

Table 4: Mean cortisol after awakening for the comparison groups (Mean ± SD) in nmol/ml.

Time of cortisol sample	Controls	Major Depression
Awakening	7,2 ± 3,8	6,7 ± 3,5
+ 30 minutes	10,4 ± 3,9	10,8 ± 4,4
+ 45 minutes	9,9 ± 3,9	11,3 ± 4,2
+ 60 minutes	8,9 ± 4,0	10,7 ± 4,3

significant with $F_{(3, 144)} = 16.2$, p<.001.

The depressed girls had significantly higher mean values on all three scales.

They felt more stress load physically as well as psychologically and were more vulnerable to the perception of stress situations Table 3.

The coping strategies of the girls with depression were significantly more inadequate than those of the controls.

They avoid stress situations passively. If a stress situation was present, they ruminate extensively over the situation. Resignation and aggression are also possible, whereas a lack of constructive reactions such as the search for social support can be observed Table 4.

Mean cortisol over time was analyzed by MANOVA for repeated measurement. A significant interaction effect between cortisol over time and comparison group was found. $F_{(3,132)} = 3.01$, p < .04. Excluding awakening all means were higher for girls with major depression Table 5.

The comparison of the mean values with MANOVA for all scales

Table 5: Somatic complaints for the comparison groups (M ± SD).

GBB-KJ scale	Controls	Major Depression
Exhaustion	8.7 ± 4.9	14.2 ± 5.4
Stomachache	7.1 ± 3.4	9.4 ± 4.0
Pain in legs	5.4 ± 3.9	8.7 ± 5.3
Circulatory problems	4.1 ± 3.5	8.0 ± 4.5
Complaints of a cold	10.4 ± 4.3	11.7 ± 4.5

simultaneously yielded F (5, 139) = 10.1, p<.001, depressed girls suffered significantly more by somatic complaints, in particular by exhaustion, pain in legs and circulatory problems.

Results of Regression analyses to predict severity of depression after 6 months.

The analyses were carried out one after another with varying coping strategies systematically as predictors. Only destructive coping was used. Each analysis included a diagnosis of anxiety as a predictor, a coping strategy and somatic stress load according to GBB.

Regression analysis 1

Dependent variable was severity of depression after 6 months

As predictors served the coping strategy passive avoidance, the diagnosis of an anxiety disorder, somatic stress load according to GBB, and mean cortisol 60 minutes after awakening. The regression equation was significant with F (7,66) = 5,9 p<.001 and an explained variance of 34%. Significant predictors were the anxiety diagnosis, the coping strategy and the mean cortisol.

Regression analysis 2

Dependent variable was severity of depression after 6 months

As predictors served the coping strategy rumination, the diagnosis of an anxiety disorder, somatic stress load according to GBB, and mean cortisol 60 minutes after awakening. The regression equation was significant with F (7,66) = 5,0 p<.001 and an explained variance of 30%. Significant predictors were the mean cortisol and exhaustion.

Regression analysis 3

Dependent variable was severity of depression after 6 months

As predictors served the coping strategy resignation, the diagnosis of an anxiety disorder, somatic stress load according to GBB, and mean cortisol 60 minutes after awakening. The regression equation was significant with F (7,66) = 7,1 p<.001 and an explained variance of 39%. Significant predictors were the mean cortisol, exhaustion and resignation.

Discussion

Female adolescents with depression reported a markedly higher stress load than nondepressed young girls. This was true for general vulnerability against stress, for psychological stress load and also for physiological signs of stress [23,24].

This is a confirmation of data which are known from former investigations.

In a study with standardized diaries in 15-year-old depressed children a heightened vulnerability to stressors such as family conflicts or school problems was a highly significant predictor for maintenance of depressive symptoms [25] and may also be interpreted as a risk factor for developing depression. A correlation between stress load and depression has been seen in a case-control study [26].

Inadequate stress coping is also figured in [27]. A high degree of depression led to behavior such as denying stress, rumination, self blame, and resignation, but not to constructive tries to deal with stress such as problem-solving.

A meaningful extension of former results can be concluded from the regression analyses that took into account not only the comorbidity of an anxiety disorder but also a hyperactivity of the HPA axis in the children. Both factors together with destructive coping strongly reinforced severity of depression in the long-term.

The relationship between a hyperactivity of HPA axis, the stress coping with regard to social support and severity of depression is supported by an empirical study of [28], which also reported such a relationship. But the correlation depended on interindividual differences in stress coping and reactivity of HPA axis in stress situations.

These findings for depressed adolescents can be integrated into the cognitive model of [29], which was proposed for adult depressed. A high stress load psychologically as well as on a somatic level provokes inadequate coping in the short term for example resignation, aggression and passive avoidance, which prevents useful strategies in the long-term that would reduce depression. In part empirical support for this interpretation comes from an investigation of [30], who confirmed the main postulates of Beck rather than the response style theory.

The present study cannot be interpreted without limitations. The sample size was relatively small and only girls have been investigated. A generalization to boys at the moment is not possible. Also the age range was restricted to younger adolescents. Further it has to be considered that all information was based on self ratings and future investigation should take into account external evaluation.

Clinical Recommendations

Because of the significance of the anxiety disorder for the severity of depression in the young girls interventions that are tailored to the anxiety disorder may be included in treatment. Such treatment elements are described for example by [31].

Acknowledgment

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