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ARTICLE

The characteristics of the comorbidity between social anxiety and separation anxiety disorders in adult patients

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ABSTRACT

Objective: In the present study, we compared social anxiety disorder (SAD) patients with ($n = 31$) and without childhood and adulthood separation anxiety disorder (SeAD) ($n = 50$) with respect to suicidal behavior, avoidant personality disorder (AvPD), other anxiety disorders (ADs), and major depression as well as some sociodemographic variables.

Methods: In assessment of patients, we used Structured Clinical Interview for Separation Anxiety Symptoms, childhood and adulthood Separation Anxiety Symptom Inventories, Liebowitz Social Anxiety Scale, The SCID-II Avoidant Personality Disorder Module, Beck Depression Inventory, and Beck Scale for Suicidal Ideation.

Results: SAD patients with SeAD had higher comorbidity rates of AvPD, other lifetime ADs and panic disorder, and current major depression than those without SeAD. The current scores of SAD, depression, and suicide ideation and the mean number of AvPD symptoms were significantly higher in comorbid group compared to pure SAD subjects. The SAD and SeAD scores had significant associations with current depression, suicide ideations, and AvPD. The mean number of AvPD criteria and the current severity of depression were significantly associated with the comorbidity between SAD and SeAD.

Conclusion: Our findings might indicate that the comorbidity of SeAD with SAD may increase the risk of the severity of AvPD and current depression.

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Social anxiety disorder; separation anxiety disorder; avoidant personality disorder; depression; suicide

Introduction

Social anxiety disorder (SAD) is a highly prevalent anxiety disorder characterized by excessive fear of situations where an individual is subject to the scrutiny of others [1]. SAD often appears during childhood or adolescence, and usually follows a chronic course characterized by psychosocial impairment, and precede frequently the development of other mental disorders [2–4]. Genetic correlation between anxiety disorders and shared traits such as tendency to display negative affect are possible explanations for high rates of comorbidity [5,6]. Previous studies found that a 20%–69% of patients with SAD had lifetime comorbidity with panic disorder (PD), agoraphobia, simple phobia, major depression, generalized anxiety disorder (GAD), obsessive-compulsive disorder (OCD), posttraumatic stress disorder (PTSD) [4,7–16]. The risk of comorbidity was higher in probands having generalized subtype of SAD [10]. Suffering from SAD with an additional anxiety diagnosis is significantly associated with greater anxiety and even depression than patients with SAD alone [7,8], and another ADs [9,10,15]. DSM-IV [1] defined separation anxiety disorder (SeAD) by a significant or developmentally abnormal reactivity to excessive and unrealistic anxiety concerning separation, actual or imagined from attachment figures or the home. The disturbance must last for a period of at least 4 weeks, begin before age 18, and cause clinically significant distress or impairment in social, academic, or other important areas of functioning. By removing the 'age at onset' criterion, the DSM-5 acknowledged SeAD as a condition that may begin at any age. DSM-5 states that SeAD usually begins in childhood and more rarely in adolescence, and first onset in adulthood is uncommon [17]. Separation anxiety symptoms usually peak between nine and 13 months of age, decrease usually after two years of age, and may increase again by age four [18,19]. Shear et al. [20] reported that lifetime prevalence rates of childhood and adulthood SeAD were 4.1% and 6.6%, respectively, with 36% of childhood cases persisting into adulthood. Multiple evidence demonstrates that childhood SeAD may be a risk factor for subsequent SAD, PD or agoraphobia, OCD, specific phobia, acute stress disorder, and PTSD [21–27]. Manicavasagar et al. [23] showed 46% of patients with PD or GAD had a diagnosis of adult SeAD. SeAD has mainly been conceptualized as a specific precursor of adult PD with and without agoraphobia [1]. Some studies on large samples of mood and anxiety patients reported the prevalences of adult SeAD as 23% [28] and 42.4% [25]. Lipsitz et al. [29] found approximately equal rates of a history of SeAD among adults

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with PD, SAD, and OCD. The authors suggested that SAD might be a vulnerability marker for multiple anxiety disorders rather than for PD–agoraphobia alone. The prevalence of childhood SeAD was significantly higher among patients with two or more lifetime adult ADs than it was among patients with one AD. One study reported that patients with adult SeAD have greater disability in multiple domains of functioning, more severe depression and anxiety symptoms than do other AD patients, partial exception of those with SAD [28]. Several studies found also a strong association between avoidant personality disorder (AvPD) and SAD with varying rates of comorbidity between 22% and 89% [30–34]. The comorbid SAD and AvPD was reported to be associated with more severe anxiety symptoms [30,35,36], increased psychiatric comorbidity [30,34], and greater disability [34] compared to those with SAD and no comorbid AvPD. ADs including specific phobia, SAD, PD, GAD, agoraphobia, OCD, and SeAD were identified as independent risk factors for suicide ideation or attempts among children and adolescents, after controlling for demographic variables, major depression, and alcohol and drug use [37–42]. However, some of the previous studies did not find an association between ADs and suicidal behaviors [42–44], after controlling for comorbid diagnoses. SeAD and SAD are a heterogeneous group of disorders with similar symptoms such as somatic complaints, avoidance of relationships, and suicidal thoughts [26,45,46]. They have an earlier age at onset than other ADs [47], are associated with significant functional impairment, and tend to continue into adulthood. To best of our knowledge, no previous study examined the impact of SeAD on the development of other ADs, major depression, suicidal behavior, and AvPD in patients with SAD. In the present study, we investigated whether the comorbidity of childhood and adulthood SeAD with SAD was associated with increased rates of lifetime suicidal behavior, AvPD, other Ads, or major depression.

Methods

We assessed one hundred and fifty-four patients, aged 18–65 years, who met the criteria for SAD according to the Structured Clinical Interview for DSM-IV, Clinician Version (SCID-I/CV) [48,49] at the psychiatry department of an university hospital between August 2017 and October 2018. The participants had to be drug free for at least three months before the time of assessment to avoid from the confounding effects of any medications on current clinical scales. Thirty-two patients who were under any psychotropic medications, and eight subjects who refused to participate into the study, were not included into further assessments. Lifetime diagnoses of schizophrenia and other psychotic disorders, bipolar disorder, substance abuse or dependence within the past 12 months, mental retardation, or any neurological disorders were not included in the study ($n = 10$). Therefore, 102 subjects with SAD who were found to be eligible for further assessment of SeAD according to the inclusion and exclusion criteria were recruited to the study. The study was approved by the Local Ethical Committee, and written informed consent was obtained from each subject. The sociodemographic and clinical characteristics of participants, including age, sex, educational level, and marital status were determined through a semi-structured interview form. Lifetime diagnoses of SAD, OCD, PD, GAD, PTSD, and major depression were assessed using SCID-I/CV. The childhood and adulthood SeAD were assessed by Turkish version [50] of Structured Clinical Interview for Separation Anxiety Symptoms (SCI-SAS) [26]. SCI-SAS includes two parts, each of which is composed of eight items. The first part retrospectively evaluates childhood separation anxiety symptoms, while the second part assesses current adulthood symptoms. Presence of at least three out of eight criteria present for at least 1 month led to a diagnosis of childhood SeAD (before 18 years old) and adulthood SeAD (after 18 years old). Since our main purpose was to examine the associates of comorbid SeAD that first emerges during childhood and continues into adulthood among SAD patients, we excluded 21 SAD patients who had a diagnosis of adulthood onset SeAD from the study. The severity of SeAD before 18 years was measured retrospectively using Separation Anxiety Symptom Inventory (SASI) [50,51], a self-report inventory consisting of 15 items with four-point Likert type questions. We used the Turkish version [50] of Adult Separation Anxiety Questionnaire (ASA) [52] to assess the severity of separation anxiety experienced after 18 years of age. ASA is a self-report instrument including 27 items rated on a scale from 0 to 3, and higher scores indicate higher probability of separation anxiety in adulthood. The severity of SAD was assessed by the Turkish version [53] of Liebowitz Social Anxiety Scale (LSAS) [54], with higher total scores suggesting more severe social anxiety. The LSAS was found to have high internal consistency in our study sample ($\alpha = .91$). The scale contains 24 items, 13 concerning performance anxiety and 11 related to social situations. Each item is rated separately for fear (0 to 3 = none, mild, moderate, severe) and avoidance behavior (0 to 3 = never, occasionally, often, usually). Generalized social anxiety disorder (GSAD) was determined using a criterion of fear in more than four social situations, including at least one performance situation and two social interaction situations.

The SCID-II Avoidant Personality Disorder Module [55] was used to assess the presence of AvPD. Each of the seven symptoms of AvPD as absent or false ('1'), subthreshold ('2'), or present or true ('3'). In the current study, we examined AvPD as a dichotomous variable (whether or not 4 or more symptoms were present), and a continuous variable indicating the number of items. The current severity of depression was determined through Beck Depression Inventory (BDI) [56]. Each item has four statements (rated from 0 to 3) with higher scores indicating greater symptomology. We used the Turkish version [57] of Beck Scale for Suicidal Ideation (BSSI) [58] to determine the severity of suicide ideation during the past two weeks. We also asked all participants whether they ever attempted suicide during their entire lives.

Statistical analysis

All analyses were conducted using the SPSS (SPSS Science, Chicago, IL, USA) software, version 21.0, and a two-tailed

statistical significance level was set at $p < .05$. Averages were reported as means and standard deviation (SD). The sociodemographic and clinical characteristics of the patient and control groups were compared by t tests and Pearson's chi-square analysis where appropriate. Pearson's correlations were done to determine the relationships between clinical variables. It is well known that inflation of the type 1 error rate increases as the correlations and comparisons between the study variables increase. Therefore, to minimize the confounding effects of the variables with possible false-positive results, we conducted a multivariate logistic regression analysis, using 'backward elimination' method. All statistical assessments were two tailed, and we considered results to be significant at $p < .05$. Before these analyses, we tested the possible multicollinearity between the variables that would be inserted in the adjustment of models. Multicollinearity was assessed by examining tolerance and the variance inflation factor (VIF).

Results

38.2% of our sample had also a current comorbid diagnosis of SeAD. The SAD patients with SeAD ($n = 31$) had higher comorbidity rates of AvPD ($p < .0001$), other lifetime ADs ($p = .01$), and PD ($p = .03$), and current diagnosis of major depression ($p < .0001$) than those without SeAD ($n = 50$). The number of patients with GSAD were significantly greater in SAD + SeAD group than in pure SAD group ($p = .004$). The scores of BDI ($p < .0001$), BSSI ($p < .0001$), total ($p = .02$) and avoidance scale of LSAS ($n = 0.007$), and the mean number of AvPD symptoms ($p < .0001$) were significantly higher in SAD + SeAD group compared to SAD group (Table 1).

The correlation analysis revealed that ASA scores were significantly correlated with total and subscale scores of LSAS. There were also significant correlations between ASA scores and the scores of BSSI ($p < .0001$), and BDI ($p < .0001$), and the mean number of AvPD symptoms ($p < .0001$). Total, fear, and avoidance scores of LSAS had significant associations with the mean number of AvPD symptoms, and BDI scores (Table 2). A backward binary logistic regression model was found to fit the data adequately (Hosmer and Lemeshow's $\chi^2 = 6.013$, $p = .646$). Overall, the model was able to correctly predict 73.4% of all cases. Seven predictors (generalized subtype of SAD, the mean number of AvPD symptoms, the scores of BDI, BSSI, and LSAS, and lifetime diagnoses of ADs, and PD) were included in the model, using the backward conditional method. Two of these successfully predicted SAD and childhood SeAD comorbidity. The BDI scores (Exp(B) = 0.949, $p = .003$), and the mean number of AvPD criteria (Exp(B) = 0.605, $p = .01$), and were significantly associated with the comorbidity between SAD and SeAD (Table 3).

Discussion

In our study, we hypothesized that the comorbidity of childhood and adulthood SeAD with SAD would increase the rates of lifetime suicidal behavior, AvPD, other Ads, or major depression. We have found that lifetime diagnoses of any other ADs, and particularly of PD, and the comorbid diagnosis of AVPD were significantly higher in SAD patients with comorbid diagnosis of SeAD. The comorbid group had higher rates of GSAD, more severe current depression, AvPD, suicidal ideation, and social anxiety than SAD patients without SeAD. The current severity of SAD and SeAD was found to be significantly correlated with depression, AvPD, and suicide scores. Although the rates of lifetime major depression did not differ between two groups, current depression appeared to be the strongest predictor for the comorbidity between SAD and SeAD. Additionally, a higher number of AvPD symptoms strongly predicted the co-occurrence of SAD and SeAD, even after controlling for GSAD, current suicide ideation, lifetime ADs, and PD, and the severity of current SAD symptoms. Therefore, we suggested that the comorbidity between SAD and SeAD is associated with increased severity of AvPD, and current depression in our sample. Many studies reported that all anxiety disorders including SeAD are associated with increased risk for suicidal thoughts and behaviors [37,59–65]. Suicidal thoughts and behaviors may result from behavioral avoidance and aversive reactions to unpleasant emotional experiences [66]. However, some of the previous studies did not find an association between ADs and suicidal behaviors [42–44], after controlling for comorbid diagnoses. Because SAD is highly comorbid with other ADs, we suggest that it is important to address whether SeAD has an impact on suicidal behavior among SAD patients after adjusting for other confounding variables, such as depression, AvPD, and the other ADs. In the present study, we did not find any significant differences between SAD patients with and without SeAD in terms of past suicide attempts. Therefore, the comorbidity of these two anxiety disorders did not appear to increase the risk of lifetime suicidal behavior in our sample. Although the severity of current suicide ideation was significantly higher in SAD + SeAD group, this difference did not remain significant after controlling for the depression, SAD, and AvPD. Further longitudinal studies in larger samples are required to demonstrate the influence of SAD and SeAD comorbidity on suicidal behavior. One important finding of this study is that SAD patients with SeAD had more frequent and severe AvPD symptoms than those without SeAD. The diagnosis of AvPD seemed to be a significant predictor of SAD and SeAD comorbidity. Moreover, social anxiety symptoms as well as adulthood separation anxiety, and current depression scores were significantly correlated with the mean number of AvPD symptoms. These results might exhibit the increased risk of AvPD in adult SAD patients who had comorbid SeAD. Similarly, some of the previous studies reported that avoidant subjects are more likely than non-avoidant ones to present significant levels of SeAD [67]. Individuals suffering with AvPD are frequently diagnosed with comorbid depression and/or anxiety [68]. According to the DSM-IV-TR, individuals with AvPD experience a pervasive pattern of social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluation [1]. SAD and AvPD comorbidity was considered as a continuum of social anxiety, ranging from normal social anxiety and shyness to AvPD [69–71]. Previous studies reported that

Table 1. The comparison of social anxiety disorder patients with and without separation anxiety.

	SAD + SeAD ($n = 31$)		SAD ($n = 50$)		Statistical analysis		
	Mean	SD	Mean	SD	t	df	*p*
Age	26.5	9.0	25.4	6.5	0.64	79	.52
Educational level (years)	13.2	3.4	14.7	4.2	−1.63	79	.10
Childhood Separation Anxiety Scale (SASI)	26.4	4.9	8.8	6.4	12.96	79	<.0001
Adulthood Separation anxiety Questionnaire (ASA)	47.1	11.4	17.4	8.3	13.48	79	<.0001
Liebowitz Social Anxiety Scale (LSAS)							
Total	94.8	37.2	72.8	43.5	2.32	79	.02
Fear	47.8	19.6	40.2	22.3	1.56	79	.12
Avoidance	46.6	22.3	32.8	22.1	2.78	79	.007
Beck Depression Inventory (BDI)	26.8	13.0	12.2	9.7	5.75	79	<.0001
Beck Suicide Ideation Scale (BSSI)	10.0	6.9	4.2	6.5	3.82	79	<.0001
The mean number of AvPD criteria	5.9	1.5	3.8	2.0	4.98	79	<.0001
	n	%	n	%	χ^2	Df	*p*
Gender					0.66	1	.41
Female	12	38.7	24	48.0			
Male	19	61.3	26	52.0			
Marital status					0.67	2	.71
Married	6	19.4	10	20.0			
Single	25	80.6	39	78.0			
Separated/divorced	0	0.0	1	2.0			
Childhood onset SAD Present	30	96.8	42	84.0	3.16	1	.07
Generalized SAD Present	27	87.1	28	56.0	8.49	1	.004
The diagnosis of AvPD Present	29	93.5	28	56.0	12.93	1	<.0001
Any lifetime ADs (present)	20	66.7	19	38.8	5.79	1	.01
GAD	1	3.3	5	10.0	1.28	1	.25
OCD	2	6.5	4	8.0	0.17	1	.91
PD	4	12.9	0	0.0	6.98	1	.03
PTSD	1	3.2	0	0.0	1.76	1	.41
Major depression							
Lifetime – present	17	54.8	23	46.0	0.59	1	.43
Current – present	22	71.0	10	20.0	20.80	1	<.0001
Previous suicide attempt							
Present	1	3.7	3	6.0	0.31	1	.57

Table 2. The correlations of ASAS and LSAS scores with several clinical variables ($n = 81$).

	ASA	BSSI	The mean n of AvPD symptoms	LSAS Total	LSAS Fear	LSAS Avoidance	BDI
ASA	–	0.50***	0.58**	0.42***	0.33**	0.46***	0.70***
LSAS Total	0.42***	0.15	0.54***	–	–	–	0.36*
Fear	0.38**	0.13	0.48***	–	–	–	0.26*
Avoidance	0.46***	0.14	0.55***	–	–	–	0.41***

*$p < .01$, **$p < .001$, ***$p < .0001$.

Table 3. Multiple logistic regression results for the associates of SAD and SeAD comorbidity (reference group: SAD patients without SeAD).

Independent	B	S.E	Wald	Exp(B) 95% CI	*p*
Model	4.683	1.171	15.983	108.140	<.0001
BDI	−0.085	0.029	8.815	0.949 (0.869–0.972)	.003
The mean number of AvPD criteria	−0.502	0.196	6.587	0.605 (0.413–0.888)	.01
Panic disorder	2.998	2.305	0.012	4.599 (0.410–14.066)	.259
Lifetime ADs	0.247	0.674	0.135	1.281 (0.342–4.799)	.714
BSSI	−0.011	0.050	0.045	0.989 (0.897–1.091)	.832
LSAS total	0.006	0.010	0.443	1.006 (0.342–4.799)	.506
GSAD	0.967	0.813	1.575	2.776 (0.564–13.670)	.210

comorbid SAD and AvPD was associated with more severe anxiety symptoms [30,35,36], increased psychiatric comorbidity [30,34], and greater disability [34] compared to those with SAD and no comorbid AvPD. It has been shown that there are considerable associations between behavioral inhibition in childhood and subsequent SAD and other ADs [67,72–76]. Epidemiological and clinical studies suggest that both AvPD and SAD are associated with 'behavioral inhibition' which is characterized by avoidance of strangers, shyness, and increased anxiety [31,77–79]. It is also well known that like most anxiety disorders, a common aspect of SAD is persistent avoidance of anxiety-provoking places, activities, and experiences such as separation from attachment figures. Avoidant SeAD subjects may refuse to participate in activities that require separation [80]. Also, the individuals with AvPD may have fears of separation from, significant others, and may feel distress when significant others are not present [81]. Previously, it was found that SeAD was associated with more dependent personality traits [82]. Dependent personality traits may be innate and increase the vulnerability to the later development of ADs [4,83–85]. Although we did not test in this study, personality features are thought to be lifelong, beginning in childhood, and anxiety disorders typically develop later. One suggestion for the relationships among SAD, SeAD, and AvPD in our study is that SeAD as an early manifestation of anxiety in childhood may lead to SAD and AvPD, usually established in adulthood. The comorbidity of SeAD and SAD may prone some patients to develop AvPD.

The major limitations of the present study are the retrospective assessment of many variables, and the relatively small size of the sample. Another potential limitation is that results were not examined by the age at onset of SAD, and

other ADs, and by the number of previous depressive episodes. We also did not examine the relationship of previous suicide attempts with index depressive episodes.

Conclusions

Our findings indicated that the SAD patients with SeAD had higher AvPD, other lifetime ADs, and PD, and current diagnosis of major depression than those without SeAD. The severity of current depression and the mean number of AvPD criteria were significantly associated with the comorbidity between SeAD and SAD in adult patients. Prospective studies, beginning in early childhood, which evaluate the relationships of SeAD with SAD, other lifetime ADs, depression, and suicidal behavior, are required for investigating the developmental relationships between SeAD and ADs, personality in subjects with SAD. In further studies, the role of adult onset SeAD on the development of suicidal behavior, AvPD, and the other ADs among SAD patients should also be assessed.

Disclosure statement

All authors declare that they have no conflict of interests.

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