

ORIGINAL ARTICLE

Short-term antidepressant treatment of comorbid dental anxiety in patients with panic disorder

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Abstract

Objectives. The aims of this study were to determine the frequency of dental anxiety (DA) and dental phobia (DP) in panic disorder, and to follow the changes in DA levels during antidepressant treatment of panic disorder. **Methods.** Fifty-three controls and 102 panic disorder patients were assessed using the Structured Clinical Interview (SCID), the Panic-Agoraphobia Scale (PAS), and the Corah Dental Anxiety Scale (DAS). Oral health status was defined by the number of decayed, missing, and filled teeth (DMFT) index. The patients were classified into three groups: (1) those without dental anxiety (WDA), (2) those with dental anxiety (DA), and (3) those with dental phobia (DP). All patients were treated with antidepressants for 3 months and the response rates were assessed. **Results.** At baseline, DAS was significantly higher in both the DA and the DP groups than in the control group. Ten (9.8%) of the panic disorder patients fulfilled the diagnostic criteria for DP; 31 (30.4%) had severe DA. In the control group, none of the patients was diagnosed as DP, whereas 7 (13.5%) had severe DA. Panic disorder and DA both responded to the antidepressant treatment, but DAS scores remained significantly higher in the DP group than in the DA group and the control group at the end of the third month. **Conclusions.** Our data suggest that both DA and DP are more frequent in panic disorder than in healthy controls. Antidepressant treatment may have been helpful in decreasing DA levels in the DA group but not in the DP group.

Key Words: Antidepressant treatment, dental anxiety, dental phobia, panic disorder

Introduction

Receiving dental treatment can involve a high degree of anxiety. Dental anxiety (DA) is often regarded as a conditioned response to negative stimuli in dentistry or as cognitively learned anxiety [1]. DA has also been associated with higher levels of general anxiety [2–4]. Epidemiological studies suggest that between 3% and 20% of the population have high levels of DA [5]. One of the reasons for this wide variation in rates may be that while some studies measure DA, others measure dental phobia (DP).

The main difference between DA and DP relates to the degree of impact on normal functioning. To be classified as phobia, the avoidance, anxious anticipation, or distress in the feared situation, there has to be significant interference with the person's normal

routine, occupational (or academic) functioning, or social activities or relationships, or there has to be manifest marked distress about having the phobia. DP is classified as a specific phobia in DSM-IV [6].

High comorbidity rates have been found in previous studies of the psychiatric comorbidities with DP [7–9]. In one study, high DA (16.8%) was found to be associated with a high number of other phobias, more psychiatric impairment, more social disability due to phobic disorder, and higher general anxiety levels [10]. In another study on a group of high DA patients, 19% reported conditioned specific phobias (pain, drilling, injection, etc.) and 37.5% had symptoms of general anxiety disorder [11]. Kaakko et al. [12] found that 7.6% of dental phobics also had panic disorder.

There are many comorbid psychiatric disorders related to DP, but there are no studies on DP in panic

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disorder. Panic disorder is a pathological condition characterized by repeated panic attacks, combined with a series of long-lasting symptoms and attitudes that are present between attacks. The DSM-IV criteria require either a minimum number of attacks or that the presence of unexpected panic attacks is followed by persistent concern about having another panic attack, worry about the possible implications or consequences of the panic attacks, or a significant behavioral change (usually avoidance or restrictive behavior). Patients with panic disorder are at increased risk of having other psychiatric conditions, e.g. major depression, agoraphobia, or other simple phobias [13–17]. More than one subtype of specific phobia can coexist along with other anxiety disorders with panic disorder [4,18].

Dental phobic patients with comorbid psychiatric diagnoses are at higher risk for poor oral health, including tooth decay and poorer oral function [19,20], so the treatment of DA or DP may reduce dental problems.

The effect of sedative medication or behavior therapy on DA has been investigated in earlier studies: to help patients cope with DA, some therapists have used fast-acting benzodiazepines, midazolam, triazolam, nitrous oxide, or local anesthesia to sedate the patient [21–25]; others have tried behavioral modification or cognitive behavioral methods [26–28].

Weiner & Sheehan [29] reported that DA was considered to be a component of a constitutional vulnerability to anxiety disorders, as evidenced by multiple fears, generalized anxiety, or panic disorders [30]. Antidepressant treatment is usually effective on comorbid anxiety or depressive disorders [31]. In accordance with these findings, we hypothesize that antidepressant treatment may be effective in DA comorbid with panic disorder. However, there are insufficient data about the treatment of DP or DA with antidepressant drugs.

The aims of this study were: (i) to determine the frequency of DA and DP in panic disorder and (ii) to follow the changes in DA levels during the antidepressant treatment of panic disorder.

Material and methods

Subjects

In the first part of the study, an unmatched case control study was designed to determine the frequency of DP and DA in the panic disorder group versus the control group. The study sample was calculated based on an assumption that the frequency of DA in panic disorders would be 30% [32] and 9.6% in healthy controls [33]. Power calculations resulted in a sample size of 56 controls and 113 cases.

In the second part of the study, a 3-month follow-up study was designed to treat panic disorder and to evaluate the changes in DA levels during the treatment period. Panic disorder patients who had been admitted

to the Psychiatric Outpatient Unit of the Cukurova University Medical Faculty Hospital were followed up for 3 months. Assessments were carried out before the beginning of psychiatric treatment and at the end of the 1st and 3rd months.

Of the total 113 consecutive panic disorder patients, 11 had dropped out by the end of the 1st month and 102 had completed the follow-up assessments. This participation represented 90.2% of the initial group. The subjects who did not complete the study did not differ from the rest of the group in terms of age, sex, or DAS scores.

The control group consisted of 53 healthy people—age, sex, and education matched—selected from the relatives or close friends of the patients. All of the control subjects completed the study.

Psychiatric treatment was based on pharmacotherapy with antidepressants without any structured psychotherapy. The demographic features of subjects, e.g. gender, age, and education, were recorded on demographic data forms regularly used for clinical and research purposes at the Psychiatric Department of the Cukurova University Medical Faculty Hospital.

The 42 (27.1%) males and 113 (72.9%) females who participated in the initial interviews had an average age of 38.7 ± 12.1 years. Thirty-seven (36.6%) were working full or part-time, 5 (5.0%) were unemployed, 40 (39.6%) were housewives, 10 (9.9%) were retired, and the mean duration of education was 10.29 ± 4.5 years for all groups.

Procedure

DAS and HAM-A were applied at baseline, 1st month, and 3rd month to the control and patient groups; DMFT was applied only at baseline. PAS was applied at baseline, 1st month, and 3rd month to all patients.

After informing the patients about the study, i.e. reviewing the current literature, detailing the association between psychiatric conditions and dental factors, discussing the importance of treatment of psychiatric and dental conditions, and stressing that there would be an evaluation of the dental health and a referral to a dentist if requested but that no dental treatment would be provided by the study, informed consent was obtained from the participants. The study protocol was approved by the local Ethics Committee of Cukurova University.

Psychiatric assessment

Psychiatric assessments were performed using Turkish versions of the instruments described below:

Structured Clinical Interview for DSM-IV Axis I Disorders (SCID): A psychiatric diagnostic assessment was carried out by an experienced psychiatrist using the SCID [34]. SCID employs the criteria of the DSM-IV and has been found to be a highly reliable tool for assessing psychiatric disorders [35]. Diagnosis of

specific phobias (dental phobia) and panic disorders was made based on the SCID.

Clinical Global Impression (CGI): CGI was used to assess the severity of the panic disorder [36].

Hamilton Anxiety Inventory (HAM-A): General anxiety level was assessed using the Hamilton Anxiety Inventory [37,38].

The Panic and Agoraphobia Scale (PAS): PAS assesses the severity of panic disorder and is compatible with DSM-IV classifications. PAS was specially developed for monitoring the efficacy of drug treatments [39,40].

Corah Dental Anxiety Scale (DAS): DA was measured using the DAS Turkish version [33]. This instrument contains four questions: anxiety about a dental appointment if it occurred tomorrow, anxiety in the dentist's waiting room, anxiety while waiting for tooth cleaning, and anxiety while waiting for drilling. Each is scored from 1 to 5, and totalled 4–20 for analysis [41]. The cut-off score of 13 or higher to indicate high DA is well established in the dental literature [42]. Higher scores indicate greater anxiety about the dentist [43].

All subjects (except one DP patient who completely refused to visit the dental clinic) were examined by a dentist and the DMFT index (WHO Classification 1987) was used to determine the prevalence of dental caries [44].

The patients were classified into three groups. Sixty-one patients who had DAS scores of 4–12 were labeled as panic disorder without dental anxiety (WDA). The remaining 41 patients, those having DAS scores of 13 or more, were all evaluated by SCID. Ten were diagnosed as DP, and 31 (who had a DAS score 13 or more but not diagnosed as having DP) were labeled as panic disorder with DA.

All of the panic patients had antidepressant treatment. None received psychotherapy sessions for their panic attacks or for DP. The major aim of the antidepressant treatment was to reduce panic attacks. The psychiatrist was responsible for arranging the treatment according to the severity and clinical conditions of the panic disorder. Only antidepressants were employed for the treatment of panic disorder. At the end of the 1st month, efficacy of the treatment was evaluated, and the dosage of drugs was adjusted based on clinical interview. Of the total 102 patients, 44 (43.1%) were taking sertraline 69.3 mg/day, 33 (32.4%) citalopram 29.3 mg/day, 11 (10.7%) fluoxetine 28.1 mg/day, and 12 (11.8%) venlafaxine 150 mg/day. One patient taking venlafaxine and another sertraline stopped their medications because of side effects (nausea, constipation, dry mouth caused by venlafaxine, and nausea caused by sertraline), but they remained in the study and completed the follow-ups.

Statistical analyses

Statistical analyses were performed using the statistical package SPSS v. 12.0 (SPSS Inc. Chicago, Ill., USA).

Normal distributions of each continuous variable were checked. Since some of the data were not distributed normally, appropriate non-parametric tests were chosen. Student's *t*-test, the Mann-Whitney U-test, Kruskal Wallis test, and Spearman rho correlation tests were used for continuous data. The chi square test and McNemar test were used to compare categorical data between and within groups. Time-dependent intra-group data were analyzed using the Friedman test. The Wilcoxon rank-sum test was used to evaluate the differences within groups toward the baseline. Bonferroni's correction was applied ($p < 0.05/n$; where n = number of comparisons) when multiple comparisons were made, and the results were presented as mean $\pm$ SD and median (min-max).

Results

Demographic features

In the panic disorder group, the 26 men (25.5%) and 76 women (74.5%) had an average age of 38.5 (SD: 12.5) years. There were no significant differences between the panic disorder group and the control group in terms of age, sex, education, or marital status. The mean scores of DAS and DMFT were significantly higher in females ($p = 0.04$ and $p = 0.05$, respectively) and in low educated groups ($p = 0.02$ and $p = 0.009$, respectively).

A positive significant correlation was found between DAS and PAS ($r = 0.38$, $p = 0.001$), between DAS and HAM-A ($r = 0.32$, $p = 0.001$), and between DAS and DMFT ($r = 0.50$, $p = 0.001$) in total. All scales (DAS, HAM-A, PAS, and DMFT) were significantly correlated with each other.

Frequency

The mean DMFT score of patients with panic disorders was significantly higher than that of the control group ($p < 0.01$ for all) (Table I). Ten (9.8%) of the panic disorder patients fulfilled the diagnostic criteria for DP; 31 (30.4%) had severe dental anxiety (DA) without fulfilling the criteria for phobia, whereas 7 (13.5%) controls had severe DA (DAS over 14 scores).

Dental status

The subjects were classified into two groups depending on dental status: (a) a no dental problem group (NDP) and (b) a with dental problem group (WDP). Thirty-nine (73.6%) of the 53 control subjects and 87 (85.3%) of the 102 panic disorder patients had a dental problem. Mean DAS score was significantly higher in WDP groups than in NDP groups in both the control and panic disorder groups. In the control group, the mean score of DAS did not change in either the NDP or the WDP groups during the study period. However, DAS score was significantly decreased in both the

Table I. Distribution of DMFT scores between groups

Group	Decayed Mean $\pm$ SD Med (Min-Max)	Missing Mean $\pm$ SD Med (Min-Max)	Filled Mean $\pm$ SD Med (Min-Max)	DMFT Mean $\pm$ SD Med (Min-Max)
Control ($n=53$)	3.2 $\pm$ 1.8 3 (0–8)	1.9 $\pm$ 1.7 1 (0–10)	2.6 $\pm$ 2.5 2 (0–11)	7.7 $\pm$ 3.6 7 (0–16)
Panic total ($n=101$)	5.9 $\pm$ 4.1 5 (0–17)*	4.4 $\pm$ 4.5 2 (0–17)*	1.7 $\pm$ 1.3 1 (0–6)*	12.2 $\pm$ 4.9 12 (0–21)*
WDA ($n=61$)	4.3 $\pm$ 2.6 3 (0–13)	4.6 $\pm$ 4.9 2 (0–17)	1.8 $\pm$ 1.4 0 (0–6)	10.9 $\pm$ 4.5 10 (0–20)
DA ($n=31$)	8.3 $\pm$ 5.0 8 (0–17) ^f	3.8 $\pm$ 3.9 2 (0–12)	1.8 $\pm$ 1.4 1 (0–6)	14.0 $\pm$ 4.8 16 (0–20) ^f
DP ($n=9$)	9.0 $\pm$ 4.0 9 (3–15) ^f	4.6 $\pm$ 2.5 5 (1–8)	1.2 $\pm$ 0.4 1 (1–2)	14.8 $\pm$ 5.2 13 (8–21) ^f

* $p < 0.001$ between control and total panic patients.

^f $p < 0.05$ DA and DP compared with WDA.

DMFT: Decayed missing filled teeth.

WDA: Panic disorder without dental anxiety.

DA: Dental anxiety.

DP: Dental phobia.

NDP and WDP groups in panic disorders during the study period (Table II).

group than in the control group at each time period. CGI-S score was 4 at baseline, 3 at first month, and 2 at the end of the 3rd month.

Treatment

The DAS, HAM-A, and PAS scores were significantly decreased in the DP, DA, and WDA groups over 3 months of treatment for panic disorders (Table II). However, at no time was the WDA group statistically different from the control group. DAS was significantly higher in the DA group than in the controls at baseline and 1st month, but there was no significant difference between DA and the control group at the 3rd month. DAS scores remained significantly higher in the DP

Discussion

Generally, anxiety disorders, especially panic disorder, have high comorbidity rates of other psychiatric conditions (other simple phobias). In this sample of panic disorder patients, the frequency of DA was 30.4% and of DP 9.8%. As anticipated, these ratios were higher than those of the control group [13–17].

Females had significantly higher DAS score than males, and uneducated subjects had significantly

Table II. DAS, HAM-A, and PAS scores between control and subgroups of panic disorders according to follow-up time

	Control Mean $\pm$ SD ($n=53$)	Panic Mean $\pm$ SD			Panic total ($n=102$)	Panic Mean $\pm$ SD WDP ($n=87$)
		WDA ($n=61$)	DA ($n=31$)	DP ($n=10$)		
DAS						
Baseline	8.4 $\pm$ 3.7	7.4 $\pm$ 3.3	16.5 $\pm$ 1.2*	19.8 $\pm$ 0.4*	11.4 $\pm$ 5.6**	12.1 $\pm$ 5.4
1 month later	8.5 $\pm$ 3.3	7.7 $\pm$ 3.8	12.7 $\pm$ 3.4*	16.9 $\pm$ 1.4*	10.1 $\pm$ 4.8	10.8 $\pm$ 4.7
3 months later	8.1 $\pm$ 3.1	6.6 $\pm$ 3.0	9.5 $\pm$ 3.5	16.2 $\pm$ 1.1*	8.7 $\pm$ 4.5	9.1 $\pm$ 4.3
<i>p</i> -value	0.2	0.2	0.001	0.001	0.001	0.001
Ham-A						
Baseline	11.8 $\pm$ 5.2	18.7 $\pm$ 6.8*	22.8 $\pm$ 8.2*	22.2 $\pm$ 10.4*	20.3 $\pm$ 7.8*	
1 month later	11.3 $\pm$ 4.8	13.6 $\pm$ 6.9	13.7 $\pm$ 6.1	11.2 $\pm$ 7.3	14.0 $\pm$ 6.7*	
3 months later	9.8 $\pm$ 3.0	11.3 $\pm$ 5.1	9.7 $\pm$ 2.8	8.2 $\pm$ 2.5	10.5 $\pm$ 4.5	
<i>p</i> -value	0.04	0.001	0.001	0.02	0.001	
PAS						
Baseline		24.1 $\pm$ 11.8	28.1 $\pm$ 9.2	31.8 $\pm$ 6.1	26.0 $\pm$ 10	
1 month later		17.0 $\pm$ 8.3	19.5 $\pm$ 9.4	14.5 $\pm$ 2.7	17.3 $\pm$ 7.9	
3 months later		5.3 $\pm$ 2.8	8.6 $\pm$ 3.8	5.5 $\pm$ 1.6	6.8 $\pm$ 3.6	
<i>p</i> -value		0.001	0.001	0.02	0.001	

HAM-A: Hamilton Anxiety Inventor. PAS: Panic and Agoraphobia Scale. DAS: Dental Anxiety Scale.

WDA: Panic Disorder without Dental Anxiety. DA: Dental Anxiety. DP: Dental Phobia. WDP: With Dental Problem.

* $p < 0.05$ compared with control Mann-Whitney U-test.

p-value within groups time dependent (Friedman test).

higher scores than highly educated subjects. Similar differences were found for DMFT scores. The results were consistent with other studies [45].

The positive significant correlation between DAS and other scales (PAS, HAM-A) suggests that DA may be part of general anxiety, and that treatment of the anxiety disorder may reduce the DA. There was good correlation between DAS and DMFT scores, suggesting that anxiety levels can adversely affect the oral health of patients.

The oral hygiene habits status of both groups was similar, but a difference of DMFT mean score between the control group and the DA and DP groups was found to be related to the decay (D) component. This indicates that the patients with DA may avoid dental attendance. Our results were consistent with other studies [19], although the oral health status of our population was not so good; the results should therefore be interpreted with caution.

Panic disorder and DA both responded to the antidepressant treatment, but DAS scores remained significantly higher in the DP group than in the DA group or the control group at the end of the study. The mean score of DAS in DP was still over 15 at the 3rd month. In the main, DP was not relieved by treatment of antidepressant medication.

The results should be interpreted with caution because of the small number of DP patients and the non-randomized study design. Further placebo-controlled, double-blind studies in larger samples are needed if we are to gain a better understanding of the drug treatment response in patients with DP.

Conclusions

The study suggests that both DA and DP are more frequent in panic disorder patients than in healthy controls, and that antidepressant treatment may be helpful in decreasing DA levels in DA groups but not in DP groups.

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