Evaluation of Changes in Anxiety and Depression Symptoms, and Sexual Functions in Patients Receiving Antidepressants; 3 Months-Long Naturalistic Follow-Up Study

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SUMMARY

Objective: In this study we evaluated if antidepressant treatment in relationship with the change in anxiety and depression leads to changes in sexual functions.

Material and Method: Eighty-two patients, whom started antidepressants, were enrolled in the study. Hamilton Depression Rating Scale, Hamilton Anxiety Rating Scale, General Assessment of Functioning Scale and Arizona Sexual Experience Questionnaire were administered to the patients at the first interview, and followed monthly for 3 months.

Results: Almost 70% (n=57) of patients were diagnosed with sexual dysfunctions prior to the antidepressant treatment. After the third month of antidepressant treatment, 24 patients prior diagnosed with sexual dysfunctions showed no impairment in ASEC scores, whereas 33 patients' scores were still at impairment level. However, 8 out of 25 patients with no symptoms of sexual dysfunctions prior to the treatment were diagnosed with sexual dysfunctions during the study. Sexual dysfunctions correlated with patients' level of functioning, separately from anxiety and depression symptoms.

Conclusion: Our study showed that the rate of sexual dysfunction is high in psychiatric patients. However, antidepressant treatment can lead to sexual dysfunctions.. It would be appropriate for clinicians to determine benefit-loss balance by considering patients' mental syndromes together with sexual functions.

Keywords: Sexual dysfunction; antidepressive agents; depression; anxiety

INTRODUCTION

Prevalence of sexual dysfunction varies among countries with females (40-45%) more affected than males (20-30%) (Lewis et al. 2004, Kammerer-Doak and Rogers 2008, Aslan and Fynes 2008). Studies suggested that 25-75% of psychiatric patients suffer from sexual dysfunctions (Laurent and Simons 2009, Kendurkar and Kaur 2008, Kennedy and Rizvi 2009, Lee et al. 2013).

The relationship between mental disorders, their treatment and sexual dysfunctions is quite complex (Segraves and Balon 2013). Additionally, antidepressants used in the treatment of depression and anxiety disorder, can increase or trigger sexual dysfunctions (Segraves and Balon 2013, Baldwin and Foong 2013, Duenas et al. 2011; Schweitzer et al. 2009; Williams et al. 2010; Montejo et al. 2011). The sexual dysfunctions caused by antidepressants may lead further to decrease of self esteem, breakdown of interpersonal relationships, decrease of life quality, breakdown of the recovery stage of the depressive period, triggering of a new recurrence, incompatibility with the treatment and/or discontinuance of the treatment (Baldwin and Foong 2013; Duenas et al. 2011; Montejo et al. 2011; Krishna et al. 2011).

Rates of sexual dysfunction caused by antidepressant treatment vary in a wide range, namely between 15% and 96% depending on the methods used (Baldwin and Foong 2013,

Received: 08.04.2015 - **Accepted:** 19.10.2015

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doi: 10.5080/u13606

Lee et al. 2013; Schweitzer et al. 2009; Williams et al. 2010). Most studies compare the frequency of sexual dysfunction caused by 2 or more different antidepressant drugs (Segraves and Balon 2013). The pharmaceutical companies generally support controlled double-blind studies. New antidepressant medication is mostly compared with a known drug that causes sexual dysfunction (Segraves and Balon 2013). Most study that investigate sexual dysfunctions as a side effect of antidepressants have a cross sectional design (Segraves and Balon 2013). The effect of antidepressants on sexual functions can be determined by an automatic notice of the patient or by using questionnaires that evaluate the sexual dysfunction. It is asserted that the questionnaires are more sensitive for detection sexual dysfunctions than automatic notice of the patient (Segraves and Balon 2013; Williams et al. 2010). The evaluation of the effects of antidepressants on the sexual functions is depended whether the patient is within the recovery period of the disease and the dose and duration of drug (Segraves and Balon 2013). Most antidepressant drugs-related sexual side effects are reported after the symptoms of the mental disease regressed. This is mostly due to the fact that the patients draw their attention to the sexual dysfunction after the symptoms of their mental disease regress (Schweitzer et al. 2009). Furthermore, it is claimed that any side effect such as decreased sexual drive is a frequent symptom of depression and it recovers by means of a successful treatment, so the complaint of decreased sexual drive may arise partially from the recovery of depression. (Schweitzer et al. 2009; Clayton et al. 2006). İncesu (1999) showed that patients with a normal sexual life before diagnosis of their psychiatric disease, had complains about the sexual dysfunction even after the disease symptoms disappeared. They speculated that this could be related to the side effect of the drug and not their mental disorder. Schweitzer et al. (2009) emphasized that follow-up of both sexual function and mental symptoms is needed by using valid and reliable scales.

The aim of this study is to determine if antidepressant treatment leads to changes in sexual functions by using valid and reliable scales. Patients starting antidepressant drug were followed monthly for 3 months and the relationship between the changes of the mental symptoms, sexual functions, anxiety and depression symptoms were determined.

MATERIAL and METHOD

Study Population

Seventy-four female and thirty males were enrolled in the study through the Psychiatry Department of Medical Faculty in Eskişehir Osmangazi University immediately. Patients inclusion criteria were as followed: starting antidepressant, either married or have sex partner for at least 3 months, older than 18 and being literate. Exclusion criteria: having psychiatric application due to (a complaint) complaints about the sexual functions before the disease, psychotropic drug for the last 3 months, using any hormonal or know drugs that are causing sexual dysfunction, diagnosis that affect the sexual dysfunction directly such as diabetes, hypertension, spinal cord damage, alcohol or substance abuse and any organic mental disorder or mental deficiency.

During the study, a total of eight male and fourteen female patients were excluded due to discontinue of drug during the study or missing follow-up visits. Therefore, 82 patients were used for analysis.

The study was approved by the Ethics Committee of Eskişehir Osmangazi University upon the letter dated 02.01.2014 with no. 2014/01. An informed consent was obtained from all patients.

Administration

The Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I) was performed and diagnoses of the patients were confirmed. Socio-demographical, Hamilton Rating Scale for Depression (HAM-D), Hamilton Anxiety Rating Scale (HAM-A) and General Functional Rating Scale (GAF) were collected. All patients were requested to take the Arizona Sexual Experiences Scale (ASEX). All the above clinical scales were collected during their control interviews and at months 1, 2 and 3. Follow-up periods of the patients were determined by considering week 4-6 expected for the drug activity, 12-week treatment periods of acute period and periods of the studies conducted about the relevant subject in literature.

Data Collection Tools

Socio-demographical data form is used to record the socio-demographical and clinical characteristics of the patient.

The Structured Clinical Interview for DSM IV Axis I Disorders (SCID-I) is a structured clinical interview for making the DSM IV Axis I diagnosis. It is used as the standard interview to verify the diagnosis in clinical studies (First et al. 1997). Validity and reliability study about the Turkish form was performed by Özkürkçügil et al. (1999).

Hamilton Rating Scale for Depression (HAM-D) is a questionnaire developed by Hamilton to measure the depression level and the change of the symptom severity (Hamilton 1960, Williams 1978). The 17-item questionnaire form was used in this study. Validity and reliability study about the Turkish form of the scale was performed by Akdemir et al. (1996).

Hamilton Anxiety Rating Scale (HAM-A) is a questionnaire developed by Hamilton (1959) to measure the severity of anxiety. Validity and reliability study about the Turkish form of the scale was performed by Yazıcı et al. (1998).

Arizona Sexual Experiences Scale (ASEX) is a self-report questionnaire developed by McGahuey et al. (2000) to evaluated disorders of sexual functions in psychiatric patients. There is a gender specific version with 5 questions. Each question of the

scale scrutinizes sexual desire, psychological arousal, psychological arousal, capacity of reaching orgasms, feeling of satisfaction as a result of orgasm in order. Every question is given a score from 1-6. The total score varies between 5 and 30. A person is considered of having a sexual dysfunction of they have a total score of 19 or higher; a score of 5 or higher on at least one question; or a score of 4 or higher on 3 questions. The ASEX score is highly correlated with sexual dysfunctions identified by the clinician (Yılmaz and Özaltın 2010; Çiftçi et al. 2005). Validity and reliability study of the Turkish form was performed by Soykan (2004) and it was determined that its internal consistency and reliability corresponding to .89-.90 Cronbach Alpha values are high and it is valid for distinguishing the sexualdysfunction. During the analysis of the data in this study, the scale was scored in accordance with its original and Cronbach Alpha value of the sampling group was found to be. 98.

General Functional Rating Scale (GAF) is a numeric scale used in the fifth axis of DSM-IV. It is a measurement tool that evaluates the psychological, social and professional functionality of the person (Luborsky 1962; Sorias 1997).

Statistical Analysis

Statistical analysis was done by using IBM SPSS Statistics 21.0 and Sigma Stat 3.5. Shapiro Wilk's test was used to search the conformity of the data to normal distribution. Mann-Whitney U test was used to compare the groups. Friedman's test was used to compare the values of different measurement times. For iterative measurements, ANOVA (Single Factor Iterative) test of double-sided iterative measurements was used. Spearman correlation coefficients were calculated to determine the direction and magnitude of the relationship between the variables. The effects of anxiety and depression on general functionality and sexual function were purified through partial correlation analysis and the correlation analysis was applied between the problems of general functionality and sexual function. In the analysis of the cross tabs prepared, Pearson Chi-Square, Pearson Exact Chi-Square, Yate's Chi-Square and Fisher's Exact Chi-Square analysis were used and value p<0,05 was accepted for statistical significance.

RESULTS

Socio-demographical and Clinical Characteristics

Eighty-two patients (26.80% females, and 73.2% males) were enrolled in the study. All patients are heterosexual with an average age of 42,02 ± 9,20 years. Socio-demographic characteristics, diagnoses and medication usage of the patients are shown in Table 1.

A total of twenty-two patients (8 males, 14 females) were excluded from the study at varies time points due to non-compliancy. The HAM-A scores of the exclude patients (obtained at the first visit) were significantly lower when compared to the patients that completed the study (u=451.50, p<0.001). Furthermore, the HAM-A scores of 10 patients who came to the one month follow up visit despite being excluded from the study were significantly lower than the patients that completed the study (u=225.50, p<0.001). Sixteen excluded patients had sexual dysfunction according to their ASEX score.

All patients (n=82) that complete the study were divided into two groups based on their ASEX scores at the first interview. Sexual dysfunction (SD+) was found in almost 70% of study population (n=57) and was predominant in women (Females n=44, males n=13). Twenty-five patients did not have sexual dysfunction (SD-) (males=9, female=16). No significant difference was found between the groups regarding gender, age, number of children, duration with partner, education, employment status, monthly income, diagnosis group and the class of their antidepressant drug. Only the number of siblings was significantly higher in the SD- groups as compared to SD+ (u=515.50; p<0.05).

Table 1. Sociodemographic characteristics, diagnosis and drugs of the patients attending the study

	Number (n)	Percent (%)
Gender		
Female	60	73.20
Male	22	26.80
Marital status		
Married, has permanent relationship and lives together.	82	100.00
		0.00
Has permanent relationship and does not live together.	0	0.00
Do not have permanent relationship	0	
Monthly income level of the family		
<1000	0	0.00
1000-2000	33	40.20
>2000	49	59.80
Employment status		
Has a regular job and is working.	36	43.90
Works in regular jobs.	0	0.00
Does not work.	46	56.10
The drugs used and their dose		
Sertraline 50-100 mg	28	34.10
Escitalopram 5-20 mg	21	25.60
Fluoxetine 20/-40 mg	14	17.10
Duloxetine 30-60 mg	7	8.50
Paroxetine 10-30 mg	6	7.30
Trazodone 50-100 mg	3	3.70
Venlafaxine 75-150 mg	3	3.70
	Mean ± standard deviation	
Coupling period with spouse (year)	18.56 ± 9.50	
Number of children	1.83 ± 0.84	
Number of people in the house	3.28 ± 1.02	
Education period (year)	9.16 ± 3.58	
Female	8.48 ± 3.49	
Male	11.00 ± 3.21	

Table 2. Comparison between the scores of the groups who have/do not have sexual dysfunction taken from the scales during the follow-up periods

	SD+ group (n=57) Median (25-75%)		SD - group (n=25) Median (25-75%)		U	p
HAM-D						
The first interview	27.00	23,00-30.00	20.00	17.50-25.50	308.50	<0.001
Month 1	19.00	16.00-22.50	13.00	11.00-19.00	355.50	<0.001
Month 2	14.00	11.00-16.50	9.00	7.50-1..00	382.50	0.001
Month 3	9.00	7.00-12.50	7.00	5.00-8.50	426.00	0.004
HAM-A						
The first interview	31.00	28.00-33.00	26.00	21.00-29.50	344.00	<0.001
Month 1	23.00	19.50-26.50	18.00	15.00-21.50	334.00	<0.001
Month 2	16.00	12.00-18.50	13.00	10.00-17.50	496.50	0.029
Month 3	10.00	7.50-12.00	8.00	4.00-10.00	409.50	0.002
GAF						
The first interview	50.00	45.00-50.00	50.00	50.00-60.00	319.00	<0.001
Month 1	55.00	50.00-60.00	60.00	60.00-67.50	389.50	0.001
Month 2	70.00	60.00-75.00	70.00	70.00-80.00	455.00	0.008
Month 3	75.00	70.00-82.50	80.00	75.00-90.00	484.50	0.019
ASEX Question 1						
The first interview	5.00	4.00-5.00	3.00	2.00-3.00	41.00	<0.001
Month 1	5.00	4.00-5.00	3.00	3.00-4.00	159.00	<0.001
Month 2	4.00	3.00-5.00	3.00	3.00-4.00	339.50	<0.001
Month 3	3.00	3.00-5.00	3.00	2.00-4.00	461.50	0.008
ASEX Question 2						
The first interview	5.00	4.00-5.00	3.00	2.00-3.00	26.50	<0.001
Month 1	5.00	4.00-5.00	3.00	2.50-4.00	138.50	<0.001
Month 2	4.00	3.00-5.00	3.00	2.00-3.50	255.00	<0.001
Month 3	4.00	3.00-5.00	3.00	2.00-4.00	411.00	0.001
ASEX Question 3						
The first interview	5.00	4.00-5.00	3.00	2.00-3.00	19.50	<0.001
Month 1	5.00	4.00-5.00	3.00	2.00-3.50	113.00	<0.001
Month 2	4.00	4.00-5.00	3.50	2.00-4.00	231.50	<0.001
Month 3	4.00	3.00-5.00	3.00	2.00-4.00	367.00	<0.001
ASEX Question 4						
The first interview	5.00	5.00-6.00	3.00	3.00-3.00	42.50	<0.001
Month 1	5.00	4.00-5.00	3.00	3.00-4.00	134.50	<0.001
Month 2	5.00	4.00-5.00	3.00	2.50-4.00	138.00	<0.001
Month 3	4.00	4.00-6.00	3.00	3.00-3.00	249.00	<0.001
ASEX Question 5						
The first interview	5.00	5.00-6.00	3.00	2.00-3.00	36.50	<0.001
Month 1	5.00	4.00-5.00	3.00	2.00-3.00	103.00	<0.001
Month 2	5.00	4.00-5.00	3.00	2.00-4.00	245.50	<0.001
Month 3	4.00	3.00-6.00	3.00	2.00-4.00	335.00	<0.001
ASEX Total						
The first interview	25.00	22.00-27.00	14.00	11.50-16.00	1.50	<0.001
Month 1	24.00	20.00-25.00	15.00	12.00-18.00	83.50	<0.001
Month 2	22.00	18.00-25.00	15.00	12.00-18.00	181.00	<0.001
Month 3	19.00	16.00-27.00	14.00	11.00-19,00	318.50	<0.001

ASEX=Arizona Sexual Experiences Scale, SD =sexual dysfunctions, HAM-D =Hamilton Rating Scale for Depression, HAM-A=Hamilton Anxiety Rating Scale, GAF=General Functional Rating Scale,
ASEX question 1; sexual desire, ASEX question 2; psychological arousal, ASEX question 3; psychological arousal, ASEX question 4; capacity of reaching orgasm, ASEX question 5; feeling of satisfaction as a result of orgasm are rated

Evaluation of the Scale Findings During Follow-Up

Hamilton Depression Rating Scale: HAM-D scores of both groups (SD+ and SD-) were significantly decreased during the first interview and iterative measurements in months 1, 2 and 3 (SD+: F=161.15, p<0,001; SD-: F=70.84, p<0,001). Furthermore, the HAM-D scores of the SD+ groups were significantly higher at all visits when compared to SD- group (first interview: u=308.5, p<0,001; one month: u=355.5, p<0,001; two months: u=382.5, p=0,001; three months; u=426.0, p=0,004)

Hamilton Anxiety Rating Scale: The HAM-A scores were significantly decreased during the first interview and iterative measurements in months 1, 2 and 3 (SD+: F=163.05, p<0,001; SD-: F= F=67.92, p<0,001). Furthermore, the HAM-A scores of the SD+ groups were significantly higher at all visits when compared to SD-group (first interview: u=344.0, p<0,001; one month: u=334.0, p<0,001; two months: u=496.5, p=0.029; three months; u=409.5, p=0,002)

General Functional Rating Scale: The GAF scores of both groups were significantly increased during the first interview

and iterative measurements in months 1, 2 and 3 (SD+: F=170.11, p<0,001; SD-: F=75.00, p<0,001). The GAF scores of the SD+ group were significantly lower at all visits when compared to the SD- group (first interview: u=319.0, p<0,001; one month: u=389.5, p=0,001; two months: u=455.0, p=0,008; three months; u=484.5, p=0,019) .

Arizona Sexual Experiences Scale: The total ASEX scores of group SD+ measured at the first and third month interview were significantly lower than the ASEX score of the first and second month interview (F= 40,45, p<0,001). No statistically significant differences were found in the SD- group between the first interview and there one, two and three month follow up (p=0,623).

Each individual question of ASEX score at 3 month in the SD+ group was significantly lower when compared to all other periods (ASEX: question 1: F=65.16, p<0,001; question 2: F=47.31, p<0,001; question 3: F=43.31, p<0,001; question 4: F=29.41, p<0,001; question 5: F=39.07, p<0,001). No statistical significant differences between all subcriteria scores of ASEX was detected during the follow-up periods in the SD- group.

Total ASEX scores of group SD+ were significantly higher than those of group SD- in the first interview (u=1,50; p<0,001) and in months 1 (u=83,50; p<0,001), 2 (u=181,00; p<0,001) and 3 (u=318,50; p<0,001).

Comparison between the scores of the groups who have/do not have sexual dysfunction taken from the scales during the follow-up periods is illustrated in Table 2.

No significant relationship was found in the SD+ group between sub criteria and total scores of ASEX, and HAM-A. A significant positive correlation between sub criteria and total ASEX scores and HAM-D scores was found in the SD+ group during the follow-up visits. Also a significant negative correlation was found between sub criteria and total ASEX scores and GAF scores in months 1, 2 and 3 of the SD+ group.

A "partial correlation" analysis was applied to determine if the relationship between ASEX and GAF scores is independent from HAM-D and HAM-A scores. As a result of the partial correlation, it was found out that problems of sexual dysfunction were related to general functionality level negatively at medium level. Partial correlation analysis results of the group comparing ASEX scores and HAM-D, HAM-A and GAF scores are shown in Table 3.

As a result of Spearman correlation analysis of SD- group, any significant relationship between sub criteria and total scores of ASEX and HAM-D & HAM-A scores was not determined during the follow-up periods whereas a significant negative relationship between sub criteria and total scores of ASEX and GAF scores was found in months 1, 2 and 3. When partial correlation analysis is applied to eliminate the probable effect of HAM-D & HAM-A scores on the relationship between ASEX and GAF scores, any relationship between scale scores of ASEX and GAF was not detected.

Evaluating the Sexual Functions of Both Groups at the End of the Follow-up

Sexual functions were again determined at the end of the study (month 3) by using the ASEX score. Of the 57 patients SD+ at the beginning of the study, thirty-three patients (57.89%) had still sexual dysfunctions whereas 24 patients had not sexual dysfunctions by the end of the study. Interestingly, 8 (32.00%) patients with SD- at the beginning of the study had sexual dysfunction at the end of the study. It was found that this sexual dysfunction emerged in 5 patients at one months follow up.

Table 3. Analysis results of the relationship between ASEX scores of the group having sexual dysfunction and their HAM-D, HAM-A and GAF scores

	ASEX 1	ASEX 2	ASEX 3	ASEX 4	ASEX 5	ASEX Total
HAM-D						
The first interview	0.302*	0.303*	0.295*	0.346*	0.365*	0.378**
Month 1	,371**	0.331*	0.288*	0.350**	0.360**	0.365**
Month 2	0.428**	0.430**	0.404**	0.491***	0.475***	0.486***
Month 3	0.606***	0.605***	0.611***	0.633***	0.647***	0.653***
HAM-A						
The first interview	0.179	0.220	0.147	0.178	0.213	0.246
Month 1	0. 391**	0.372**	0.309*	0.292*	0.371**	0.379**
Month 2	0.400**	0.473***	0.419**	0.483***	0.463***	0.467***
Month 3	0.503***	0.510***	0.484***	0.547***	0.580***	0.527***
GAF						
The first interview	-0.166*	-0.178*	-0.133*	-0.243*	-0.315*	-0.267*
Month 1	-0.617***	-0.538***	-0.544***	-0.517***	-0.484***	-0.609***
Month 2	-0.464***	-0.366**	-0.366**	-0.384**	-0.416**	-0.434**
Month 3	-0.266*	-0.331*	-0.335*	-0.293*	-0.231*	-0.306*

ASEX=Arizona Sexual Experiences Scale, HAM-D =Hamilton Rating Scale for Depression, HAM-A=Hamilton Anxiety Rating Scale, GAF=General Functional Rating Scale
ASEX 1; sexual desire, ASEX 2; psychological arousal, ASEX 3; psychological arousal, ASEX 4; capacity of reaching orgasm, ASEX 5; feeling of satisfaction as a result of orgasm are rated
*p<0.05 **p<0.01 ***p<0.001

DISCUSSION

In this study, sexual dysfunction determined by ASEX was found in 70% of newly diagnosed psychiatric patients. Many study have shown that sexual dysfunction occurs in psychiatric patient (Bonierbale et al. 2003; Kendurkar and Kaur 2008; Montejo et al. 2011). For example, Bonierbale et al. found that 65% of their patients had sexual dysfunction before treatment whereas Montejo et al. (2011) found that 73.4% had sexual dysfunctions before treatment. Kendurkar and Kaur (2008) determined that 30% of healthy controls, 50% of patients diagnosed with obsessive compulsive disorder, 64% of patients diagnosed with common anxiety disorder and 76% of patients diagnosed with major depression have sexual dysfunction. Hence, sexual dysfunction detected in our study does not pertain to a field of sexual response cycle (Laurent and Simons 2009; Kennedy and Rizvi 2009; Bossini et al. 2014; Aksoy et al. 2012).

At the end of 3-month follow-up period, sexual dysfunction was observed in 8 (32.00%) of 25 patients whom did not have sexual dysfunction before treatment with antidepressants. Grover et al. (2012) reported that 42.5% of female patients had antidepressant drug-related sexual dysfunction. The study of Lee et al. (2013) showed that 46.5% of patient with mental disorders had sexual dysfunction due to antidepressant treatment. A cross-sectional study conducted in Malaysia revealed that 50.9% of female patients had decreasing sexual desire during their recovery period, which was related to type and dosage of the antidepressants (Sidi et al. 2012). A cross-sectional study conducted in three European countries i.e Germany, Spain and the Netherlands revealed that the prevalence of sexual dysfunction observed after antidepressant treatment was 67.2%, 79.4% and 73.3% in Germany, Spain and the Netherlands, respectively (Williams et al. 2010). In a similar study conducted in France and the United Kingdom, 26.6% and 39.2% of them, respectively had sexual dysfunction after antidepressant treatment (Williams and Reynolds 2006). In both studies, the patients were requested to make self-evaluation by recalling their sexual functions before the antidepressant treatment and Krishna et al. found that 23% of male patient with depression had sexual dysfunction during their recovery period (Krishna et al. 2011). In a Japanese study, approximately 14% of patients with depression reported to have sexual dysfunction after antidepressant treatment (Kikuchi et al. 2013). Although frequency and prevalence rates of sexual dysfunctions vary between studies, the common consensus is that the frequency of sexual dysfunction changes between 30-65% in the patients using serotonin reuptake inhibitors, serotonin-noradrenalin reuptake inhibitors and monoamine oxidase inhibitors (Grover et al. 2012).

In this study, 57.89% of patients with sexual dysfunction at the beginning of the treatment had still sexual dysfunction based on their ASEX scores at the end of the treatment. This situation may be related to late response of the sexual dysfunction problems to the treatment. Significant gradual decrease in HAM-D and HAM-A scores of the group having sexual dysfunction at the beginning and during each follow-up period and a regular decrease tendency was observed in ASEX scores without any increase or stop from the beginning of the follow-up period, but its significant decrease at the end of month 3, compared to the beginning make us think about this probability. Hirschfeld et al. (2005) reported in their 9-week follow-up study that sexual dysfunction recovery occurs later than the mental symptoms. However, it is not possible to exclude the negative side effects of antidepressant drugs on the sexual functions, based on our data.

There are contradicted results regarding the period needed for antidepressants to show sexual side effects. Some studies showed that sexual dysfunctions emerge during the second week (Duenas et al. 2011, Thase et al. 2006), the first month (Gelenberg et al. 2013) or third month (Labbate et al. 1998, Ekselius and von Knorring 2001) of antidepressant treatment. Khazaie et al. (2015) found that a 14-week follow-up period is sufficient to detect the sexual dysfunction led by the antidepressant drugs. Furthermore, there are also studies showing that antidepressant treatment-related sexual dysfunctions may emerge in longer term (Schweitzer et al. 2009; Bossini et al. 2014). This study showed that 8 patients developed sexual dysfunctions during the 3 months treatment. Interestingly 5 patients developed sexual dysfunctions during the first month of treatment.

In our study, 42.11% of patients with sexual dysfunction did not have impaired sexual functions. Studies have shown that patients whom recovering clinically from depression also improving in their sexual functions (Baldwin et al. 2006; Baldwin et al. 2008, Thase et al. 2006). Although sexual side effects, which improve depending on the antidepressant treatment are reported to recover automatically after weeks or months, there is limited data about the time required to overcome sexual side effects or the possibility of automatic recovery. The study of Montejo et al. (2011) showed that only 1.7% of the patients recovered completely and 11.5% partially in first 3 months. At the end of month six, automatic complete recovery rates and partial recovery rates rose to 9.7% and 11.2%, respectively. However 79.1% of the patients did not recover. The study of Labbate et al. (1998) showed that the sexual side effects which emerge based on the drug in the first month of antidepressant treatment improved in months 2 and 3, however they could not reach to the initial level at the end of 3 months. Namely, any automatic recovery of the sexual side effects in 3 months was not detected.

Sexual dysfunctions can lead to decrease in quality of life and decline in interpersonal relationships and their functionalities (Grover et al. 2012; Kennedy and Rizvi 2009; Williams et al. 2010, Williams and Reynolds 2006). In this study, partial correlation analysis was applied to eliminate the effect of anxiety and depression symptoms on general functionality while evaluating the relationship between the scale scores of the

two groups (SD+ or SD-). There was a relationship between ASEX and GAF scores in patients with sexual dysfunction whereas this relationship was found in patients without sexual dysfunction. Based on this we concluded that sexual dysfunction may affect the general functionality independently from the symptoms of anxiety and depression.

Limitations of our study were as follows: study population was relatively smaller, absent of homogeneous diagnosis group, treatment of different classes ad types of antidepressant, a short follow up period i.e 3-months and any comparison between the drug groups could not be made due to small patient number per drug group. Sexual dysfunction, which develop secondary due to antidepressant treatment, are scarcely reported by the patients and not noticed by the clinicians. This lead to the belief that mental disorders are the only cause of sexual dysfunction. Knowledge of pre-existing sexual functions before patients are treated with antidepressants in combinations with questions asking about their sexual functions during follow up visits could help identifying sexual dysfunctions secondarily to the treatment (Montejo et al. 2011). Both anxiety and depression symptoms of the patients and their sexual functions were evaluated and followed up at the beginning and at the end of the treatment through proven validity and reliability questionnaires. Thus, clinicians can get an inside into the development of sexual dysfunctions and mental disorders. This study is the first to our knowledge that monitors both sexual functions and mental symptoms in patients with or without sexual dysfunction at the start of their treatment. Furthermore, this study is important, since there is limited number of studies investigating the sexual side effects of antidepressant drugs as well as the rate of sexual dysfunctions in Turkey, among general society and psychiatric patients.

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