Relationship Between Treatment Adherence, Insight and Violence Among Schizophrenia Inpatients in a Training Hospital Sample

Gökhan Umut[1],
Zeren Öztürk Altun[2],
Birim S. Danışmant[3],
İlker Küçükparlak[4],
Nesrin Karamustafalıoğlu[5]

[1]Psychiatrist, [5]Assoc. Prof. Dr., Bakırköy Research and Training Hospital for Psychiatry, Neurology and Neurosurgery, Istanbul - Turkey
[2]Psychiatrist, Bursa Yüksek İhtisas Training and Research Hospital, Bursa - Turkey
[3] Assist. Prof. Dr., Üsküdar University, Istanbul - Turkey
[4]Psychiatrist, Bolu İzzet Baysal Mental Health and Diseases Hospital, Bolu - Turkey

ABSTRACT

Relationship between treatment adherence, insight and violence among schizophrenia inpatients in a training hospital sample

Objective: The aim of the study was to explore the correlation of violent behavior with insight, clinical symptoms and treatment adherence in patients with schizophrenia.

Method: 104 randomly selected inpatients between 20 and 65 years of age, treated with a diagnosis of schizophrenia according to DSM-IV-TR criteria at Bakırköy Research and Training Hospital for Neurology, Neurosurgery and Psychiatry were included in the study. The Schedule For Assessment of Three Components of Insight (SAI), Overt Aggression Scale (OAS), Positive and Negative Syndrome Scale (PANSS) Turkish forms were applied to the patients.

Results: Treatment adherence was correlated with insight levels. Mean OAS scores of "non-adherent" patients were significantly higher than patients with treatment adherence. SAI scores were inversely correlated with PANSS positive and negative symptoms, but not correlated with PANSS general psychopathology scores. The OAS scores were found to be correlated with PANSS positive symptoms scores merely. There was no correlation between SAI and OAS scores.

Conclusion: The results indicate that treatment adherence is correlated positively with insight and negatively with aggression. Aggression and severity of illness are correlated as well in our sample. Community-based treatment programs and psychoeducation of outpatients should be conducted to maintain treatment adherence. Thus, violent behavior could be minimized by diminishing the severity of illness.

Key words: Schizophrenia, insight, aggression

ÖZET

Bir eğitim hastanesinde yatarak tedavi gören şizofreni hastalarında tedavi uyumu, içgörü ve agresyon ilişkisi

Amaç: Bu çalışmada şizofreni hastalarında şiddet davranışı ile içgörü, klinik belirtiler ve tedavi uyumu arasındaki ilişkinin incelenmesi amaçlanmıştır.

Yöntem: Çalışmaya, Bakırköy Ruh ve Sinir Hastalıkları Hastanesi'nde DSM-IV-TR'ye göre şizofreni tanısıyla yatarak tedavi tedavi gören, 20-65 yaş arasındaki rastgele yöntemle seçilmiş 104 olgu dahil edilmiştir. Hastalara, İçgörünün Üç Bileşenini Değerlendirme Ölçeği (İÜBDÖ), Açık Saldırganlık Ölçeği (ASÖ) ve Pozitif ve Negatif Sendrom Ölçeği (PANSS) uygulanmıştır.

Bulgular: Tedavi uyumu içgörü düzeyi ile ilişkili bulunmuştur. Tedaviye uyum göstermeyen olguların ASÖ puanlarının, uyum gösteren olgulardan anlamlı düzeyde yüksek olduğu saptanmıştır. İÜBDÖ ile PANSS pozitif ve PANSS negatif puanı arasında ters yönde anlamlı ilişki saptanmış, fakat PANSS genel psikopatoloji puanı ile anlamlı düzeyde ilişki saptanmamıştır. ASÖ puanı ile PANSS'ın yalnızca PANSS pozitif alt ölçeği toplam puanı arasında ilişki bulunmuştur. ASÖ ile İÜBDÖ arasında ilişkili bulunmamıştır.

Sonuç: Örneklemimizde, tedavi uyumunun içgörü ile pozitif, saldırganlıkla negatif yönde ilişkili olduğu; saldırganlığın da hastalık şiddeti ile ilişkili olduğu saptanmıştır. Kurumsal veya toplum bazlı çalışmalarla ve ayaktan takip edilen hastaların psiko eğitimiyle tedavi uyumu artırılmalıdır. Böylece hastalık şiddeti azaltılarak saldırgan davranışların en aza indirilmesi sağlanabilir.

Anahtar kelimeler: Şizofreni, içgörü, saldırganlık

INTRODUCTION

Mental diseases had long been related to violence in all cultures throughout history. It has also been analyzed in several studies to find out the predictors of violent behavior (1-3). Moreover, studies were done to determine factors predicting violent behavior reliably among patients after their first violent behavior (4,5). Severe violent behavior has frequently been mentioned in patients with schizophrenia in the literature (6-8).

Insight is a complicated and multidimensional phenomenon as previously suggested by several authors. Amador et al. (9) stressed the difference between awareness and psychotic symptoms; some patients can recognize the symptoms of the disease but attribute these to reasons other than a mental disorder. Some patients can recognize some of the symptoms but may not recognize the remainder. David (10) evaluated the relationship between insight and psychosis in his article dated 1990 and proposed that insight cannot be evaluated as present or absent but has three components of treatment adherence, disease awareness and correct recognition of psychotic experiences and further developed a scale evaluating insight quantitatively. It has been reported that 50 to 60% of patients with schizophrenia deny that they have a mental disorder (11,12). Insight of the patient may be partial; patients may be aware that their hallucinations and delusions are due to their disease but do not believe that they can recover by treatment (13). Moreover, insights of patients with schizophrenia were reported to be worse than patients with schizoaffective disorder and psychotic depression (11). It was also reported that partial or total impairment of insight in patients with schizophrenia diminishes treatment adherence as well (14). Valenstein et al. (15) reported in a review that treatment adherence of 40% of patients with schizophrenia is impaired at any given time and this rate will continue to drop during time.

In a study which evaluated treatment adherence of 213 patients with schizophrenia and schizoaffective disorder, Olfson et al. (16) reported that 50% of patients had partial and 20% of patients had complete non-adherence in the first three months after discharge from hospital. In this study, not taking medications at least one week in the first three months were accepted as non-adherent, patients who continued medications or left taking them less than a week were accepted as treatment-adherent.

Aggression is a frequently encountered problem in psychiatric practice. Hostile behaviors observed at psychiatric patients are generally realistic responses to non-real beliefs. Hostile behaviors occur as delusions of being harmed are thought to be psychotic versions of self-protection. Types and contents of hallucinations and delusions force the patient to behave in a certain manner and leads to hostile behavior sometimes by being given orders (17). It was reported that patients with schizophrenia make up the group mostly related with hostile behavior among psychiatric disorders and aggressive behavior is observed 2-5 times more in these patients compared to general population (18).

Frequency of aggressive behavior is lower in personality disorders and psychiatric syndromes due to a general medical condition compared to schizophrenia and very rare in affective disorders (19). Factors such as male gender, younger age, alcoholism, substance abuse, treatment non-adherence, antisocial personality disorder and paranoid sub-type schizophrenia, suicidal thoughts, history of suicidal attempt and history of frequent hospitalizations were all suggested increasing occurrence of aggressive episodes (20).

There is a correlation between psychotic symptoms and violent behavior in patients with schizophrenia (21). It was found that behaviors with killing intention are observed more in schizophrenia than general population; however, rather than saying that "most of the patients with schizophrenia are dangerous", it is more correct to say that risk of killing-intended behavior is more evident in certain sub-types of schizophrenia. Patients with paranoid schizophrenia are more prone to demonstrate violence than other patients with other sub-types of schizophrenia. Patients with schizophrenia having delusions of being harmed are under risk in particular (7,22). Aggression and persecutive delusions have been found to be more intense in patients with homicidal behavior (23).

We aimed to determine the relationship between aggressive behavior, insight and clinical manifestations in patients with schizophrenia and methods to reduce aggression risk.

METHODS

A hundred and four patients between 20 and 65 years old whom were diagnosed as schizophrenia by administering Structered Clinical Interview of DSM Disorders-I (SCID-I) according to DSM-IV and treated as inpatients at Bakırköy Research and Training Hospital for Psychiatry, Neurology and Neurosurgery between October 2009 and January 2010 were randomly recruited to the study. One hundred and forty-two patients were asked to participate in the study, however, some patients told that they cannot spare enough time, some patients told that they may be harmed and some patients told that they just do not want to participate and 104 patients accepted to participate in the study.

Ethical approval was received before the study, patients were informed about interviews and scales and were told that this procedure will not lead to any positive or negative change in their treatment and control programs and verbal and written consent were taken from patients accepted the evaluation.

Schedule for Assessing the Three Components of Insight, Positive and Negative Syndrome Scale, Overt Aggression Scale and socio-demographic data form were administered to the patients. Patients with mental retardation or dementia or receiving electro-convulsive therapy were not recruited due to possible impairment of cognitive functions.

TOOLS

Assessing the Three Components of Insight (SAI): David (10) developed Schedule for Assessing the Three Components of Insight (SAI) which is administered by clinician and assessing insight quantitatively by thinking that insight cannot be evaluated as present or absent and starting from three components of therapy compliance, awareness of illness, and correct identification of psychotic

symptoms and. SAI is a semi-structured scale consisting of eight items and administered by clinician. Highest total score of first 7 items is 14. Eighth item is presented hypothetically and decision to ask is left to interviewer. Highest total score is 18 with this item. Higher scores indicate higher levels of insight. Validity and reliability study of this scale was done by Arslan et al. (24) in 2001.

Overt Aggression Scale (OAS): This scale was developed by Yudofsky et al. (25) and is administered by interviewer. Direct interview with the patient, information and observation obtained from relatives are used for evaluation. Aggression is divided into 4 main categories in this scale: verbal aggression, physical aggression towards objects, physical aggression towards him/herself and physical aggression towards others. Validity and reliability study was done by Şahin (26) in 2004.

Positive and Negative Syndrome Scale (PANNS): It was developed by Kay et al.(27). It is a semi-structured interview scale consisting of 30 items and 7 scores. Seven items out of thirty assessed by PANNS belong to positive syndrome sub-scale, seven items belong to negative syndrome scale and remaining sixteen belong to general psychopathology sub-scale. Validity and reliability study for Turkish of the scale was done by Kostakoğlu et al. (28) in 1999.

In the 1a item of SAI, question of "Does patient accept treatment (admission to hospital and/or medications and/or other physical or psychological treatments)?", patients who ask whether they need treatment or not were accepted as treatment adherent, patients who never accepted treatment were accepted as treatment non-adherent in case supported by patient records about whether they used regular medications before hospitalization and family interviews.

Statistical Analysis

NCSS (Number Cruncher Statistical System) 2007 & PASS 2008 Statistical Software (Utah, USA) were used for statistical analyses. In addition to descriptive

statistical methods (mean, standard deviation), one-way ANOVA test was used for within group comparisons of normally-distributed parameters and Tukey HSDE test to determine groups causing differences when evaluating study data. Kruskal-Wallis test was used for within group comparisons of abnormally distributed parameters and Mann-Whitney U test was used to determine groups causing differences. Student's t-test was used for inter-group comparisons of normally-distributed parameters and Mann-Whitney U test was used for inter-group comparisons of abnormally-distributed parameters. Significance was taken at p<0.05 level.

RESULTS

Study was done with patients between 20 and 65 years old and 30.8% (n=32) were women and 69.2% (n=72) were men. When marital status of cases were examined, it was found that 60.6% (n=63) were single and 8.7% (n=9) were living alone. 18.3% (n=19) of cases were ill for 0-5 years and 81.7% (n=85) were ill for more than 5 years. Hospitalization frequency was 0-4 times in 48.1% (n=50) of cases and 5 or more in 51.9% (n=54) of cases. Ten cases (9.6%) had a history of imprisonment and two cases (1.9%) had a history of homicide (Table 1).

Table 1: Distribution of socio-demographic and various characteristics related with disease

		Min-Max.	Mean±SD
Age		20-65	38.15±10.52
			N (%)
Gender	Woman		32 (30.8)
	Man		72 (69.2)
Life Style	Alone		9 (8.7)
	Not alone		95 (91.3)
Substance Abuse	Yes		14 (13.5)
	No		90 (86.5)
Duration of Disease	0-5 years		19 (18.3)
	6-10 years		31 (29.8)
	> 10 years		54 (51.9)
Number of hospitalizations	0-4 times		50 (48.1)
	≥ 5		54 (51.9)
Imprisonment	No		94 (90.4)
	Yes		10 (9.6)

SD: Standard deviation

Among components of SA scale, awareness of mental disorder was found 13.5%, declaring mental disorder as part of the disease was found 7.7% and treatment adherence rate was found 13.4%.

SAI, PANSS positive, PANSS negative, PANSS general psychopathology and total PANSS scores and total overt aggression scales were not found to be statistically significantly different for gender, age, marital status, life style (living alone or not), substance abuse, disease duration and number of hospitalizations (p>0.05). Insight scores of cases from higher educational level (high school or upper) were significantly higher than cases from lower educational level (t=4.430; p<0.01).

Insight scores of treatment-adherent cases were significantly higher than cases who were non-adherent (Z=2.793; p<0.01). When treatment adherence and PANSS were considered, total scores of PANSS-positive (Z=4.312; p<0.001), PANSS-general psychopathology (Z=2.293; p<0.05) and PANSS-general (Z=3.542; p<0.001) of non-adherent cases were significantly higher than adherent cases but PANSS-negative total scores were not found statistically significant (Z=1.811; p>0.05). Overt aggression scale scores of non-adherent cases were significantly higher than adherent cases (Z=2.992; p<0.01) (Table 2).

Statistically significant correlations were found between total SAI score and total PANSS-positive score negatively and at level of 33.9%, total PANSS-negative score negatively and at level of 22.7%, total PANSS-general score negatively and at level of 31.8% (p<0.01, p<0.05 and p<0.01, consecutively), no statistically significant correlation was found between total SAI score and total PANSS-general psychopathology score (p>0.05). No statistically significant correlation was found between total SAI score and overt aggression scale score (p>0.05) (Table 3).

Overt aggression scale total scores were not statistically significantly different according to status of mental disorder awareness (never, sometimes, frequently) in SAI (F=0.864; p>0.05). Statistically significant difference was found between total

Table 2: Evaluation of scale scores according to treatment adherence

| | Treatment Adherence | | | |
	No (n=90)	Yes (n=14)	Z	p
	Mean±SD	Mean±SD		
SAI	3.72±4.61	7.43±4.97	2.793	<0.01
PANSS Positive Total	36.29±4.44	28.36±5.82	4.312	<0.001
PANSS Negative Total	25.57±4.19	22.93±6.19	1.811	0.374
PANSS General Psychopathology Total	52.81±5.37	47.21±7.27	2.293	<0.05
PANSS Total	114.56±10.13	98.50±16.48	3.542	<0.001
Overt Aggression Scale	5.45±2.87	2.93±2.55	2.992	<0.01

Z: Mann Whitney U test, S.D.: Standard deviation

Table 3: Relationship between SAI score and other scales

| | INSIGHT | |
	r	p
PANSS Positive Total	-0.339	<0.001**
PANSS Negative Total	-0.227	0.020*
PANSS General Psychopathology Total	-0.181	0.066
PANSS Total	-0.318	<0.001**
Overt Aggression Scale	-0.098	0.325

Spearman rho correlation analysis, *p<0.05, **p<0.01

Table 4: Relationship between Overt Aggression Scale score and PANSS scores

| INTRODUCTION | Overt Aggression Scale Score | |
	r	p
PANSS Positive Total	0.314	<0.001**
PANSS Negative Total	0.142	0.153
PANSS General Psychopathology Total	0.109	0.273
PANSS Total	0.262	0.008**

Spearman rho correlation analysis, *p<0.05, **p<0.01

PANSS-positive scores according to mental disorder awareness at SAI (F=6.866; p<0.01). Post-Hoc Tukey and HSD tests were performed to determine the reason of this difference and it was found that scores of cases who had never been aware of their mental disorders were significantly higher than scores of cases sometimes and frequently been aware of their mental disorders. Total PANSS-negative scores were not found statistically significantly higher according to mental disorder awareness (F=1.292; p>0.05).

When the relationship between SAI scores and PANSS sub-scale scores and OAS scores were examined, no significant difference was found between PANSS general psychopathology and OAS scores and SAI scores but a significant negative correlation was found between PANSS-positive symptoms, negative symptoms and total scores (Table 3).

No statistically significant difference was found between total overt aggression scale scores according to explanation of mental disorder (external forces, tiredness and stress, illness) (F=2.713; p>0.05). No statistically significant difference was found between total PANSS-positive scores (F=1.273; p>0.05) and PANSS-negative scores (F=2.243; p>0.05) according to explanation of mental disorder status.

Statistically positive correlations were found between overt aggression scale and total PANSS positive score at level of 31.4% and with total PANSS score at level of 26.2% (p<0.01). No statistically significant correlation was found between overt aggression scale and total PANSS-negative scores and PANSS general psychopathology scores (p>0.05) (Table 4).

After stepwise linear regression analysis which total OAS scores of patients were taken as dependent variable, age, gender, PANSS-positive, PANSS-negative PANSS general psychopathology and SAI scores were taken as independent variables, only PANSS-positive scores were found to have significant effect on SAI scores (Table 5).

Table 5: Factors affecting mean OAS scores according to linear regression analysis

	B	Standard Error	Beta	t	p	95% Confidence Interval
Constant	-2.665	1,778		-1.499	0.137	(-6.193-0.863)
PANSS Positive Total	0.219	0.050	0.404	4.389	<0.001	(0.120-0.318)

Model 1: F=19.26, SD=1.99, p<0.001, Adjusted R²=0.15

DISCUSSION

Primary aim of our study was to determine the relationship between aggressive behavior, insight and clinical symptoms in patients with schizophrenia. It was predicted that providing insight to in patients with schizophrenia will decrease clinical symptoms and treating positive symptoms will decrease aggressive behavior.

When sub-types of schizophrenia are considered, we found that 65.4% of cases in our study were paranoid type. It was observed that these patients become distant from people whom they expect persecutive action when they are hospitalized and do not perform violent behaviors due to good response to treatment, however, it was also observed that they showed aggressive behavior when they are out of the hospital and particularly just before they were hospitalized (19). 9.6% of cases (n=10) had imprisonment experience. We could not access any data on the proportion of Turkish population with imprisonment experience but proportion of adult people in prisons according to data of Ministry of Justice, Department of Prisons over general population in October 2011 was calculated as approximately 0.16% (29). Two cases (1.9%) included in the study had history of homicide. A study done in England and Wales reported that 85 people committed homicide out of 1594 (5%) had schizophrenia (30). Fazel et al. (31) found homicide risk 0.02% in general population and 3% in patients with schizophrenia.

About 50-60% of patients with schizophrenia deny being ill (11,12). Lincoln et al. (32) showed that insight is correlated with treatment adherence and psychosocial functionality. It is already known that partial insight or absence of insight in patients with schizophrenia impairs treatment adherence (14). Cases with higher insight scores were found to be treatment-adherent in our study. Yen et al. (33) interviewed 74 outpatients with schizophrenia twice with one year interval and found that total SAI score was correlated with treatment adherence at first interview but this correlation was not confirmed at the interview a year later. Tattan et al. (34) reported that negative symptoms are correlated with weak treatment adherence. In our study, we found that total PANSS-positive, total PANSS general psychopathology and total PANSS general scores of treatment non-adherent cases were significantly higher than treatment-adherent cases but total PANSS-negative scores were not statistically significantly different. Overt aggression scores were also significantly higher in treatment non-adherent cases.

There are studies in the literature which showed a linear correlation between level of insight and positive symptoms only (35-37), and one study showing a linear correlation between level of insight and both positive and negative symptoms (38). Rossel et al. (36) showed that there is a correlation between lack of insight and positive symptoms in schizophrenia and there is also a positive correlation between insight and executive functions. Accordingly, we found statistically significant negative correlations between SAI score and total PANSS-positive score and total PANSS-negative score. While Kemp and Lambert (39) found a correlation between negative symptoms and weak insight, Amador et al. (11) reported that there is no significant correlation between disease awareness and negative symptoms. Schwartz and Petersen (40) proposed that there is not a significant correlation between level of insight and positive and negative symptoms. These different results in studies may be due to reasons such as number of patients recruited in the study, recruitment of outpatients and inpatients together or separately, including imprisoned patients in some studies and utilization of different scales. In the 2002 review of Bjorkly (41), correlation between positive symptoms and aggressive behavior was shown. Positive correlation between psychotic symptoms such as hallucinations and

delusions and aggressive behavior in schizophrenia was reported in several studies (21,42,43). A statistically significant positive correlation of 31.4% was shown between overt aggression scale and total PANSS-positive score was found in our study consistent with previous studies. Bjorkly (44) reviewed nine studies in 2006. Correlation was found between aggression and insight in five studies but not found in four studies. No significant correlation was found between insight and aggression in our study. Lincoln and Hodgins (45) showed that aggressive behavior is related with psychopathological characteristics and positive symptom scores rather than lack of insight in patients with schizophrenia similar to our findings. Although our findings seem to be consistent with this study, evaluating components of insight separately may lead to different consequences. There is a need for more detailed studies with longer duration on this subject.

CONCLUSION

There is a tendency to limit inpatient treatment due to rising costs throughout the world. This condition makes it necessary to develop new strategies for management of aggression. Methods aiming to observe the patient outside, monitoring treatment adherence,

evaluating insight and predicting aggression should be developed. Swanson et al. (46) related aggression risk with disruption of the communication between mentally-ill patients and mental health centers. Previous aggressiveness and destructive behavior experiences are accepted as the best indicators of future aggressive behaviors (47). Understanding forces behind this behavior in the past may warn clinician for possible aggressive behaviors in the future. Information obtained from family, police records and previous hospital records in addition to information obtained from the patient are all expected to be useful. Risk factors are not only shaped by effects of major psychiatric disorder but may be related with social environment which patients live in. It was reported that aggression may be reduced by institutional and social-based studies or increasing treatment adherence by close monitoring of outpatients (48). When reducing aggression is aimed in case of schizophrenia, primary target should be increasing treatment adherence by social support projects covering caregiver training as well.

Not using scales for treatment adherence with validity and reliability study is a limitation of our study. We think that conducting studies with higher number of patients from multiple centers will contribute to literature.

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