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Original Article

Relationship between Positive and Negative Symptoms of Schizophrenia and Psychotic Depression with Risk of Suicide

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Objective: Suicide is one of the most important early causes of death in psychotic patients. The main object of this research was to determine the relationship between positive and negative symptoms of schizophrenia and psychotic major depressive disorder (MDD) with suicidal history and risk.

Methods: Sixty five patients with schizophrenia compared to 65 patients with psychotic MDD in a cross sectional study. Patients were evaluated using positive and negative syndrome scale (PANSS) (to measure severity of psychopathology) and the California risk estimator for suicide. Collected information were analyzed using SPSS 11/8 version by t-test, chi-square and ANOVA and Pearson correlation test.

Results: There was a significant relation between positive symptoms with suicidal risk and histories of suicidal attempts in patients with schizophrenia ($r= 708$, $p<0.0001$ and $r= 0.55$, $p<0.0001$ respectively). Negative symptoms also had a significant but reverse relation with suicidal risk and histories of suicidal attempts in this group ($r= -0.529$, $p<0.0001$ and $r = -0.512$, $p<0.0001$ respectively). There was a significant reverse relation between positive symptoms and suicidal risk in patients with psychotic MDD ($r= -0.26$, $p<0.036$). Negative symptoms did not have a significant relation with suicidal risk in this group. Also there was no significant relation between positive or negative symptoms and histories of suicidal attempts in MDD patients.

Conclusion: Positive and negative symptoms have different relationships with suicide in patients with schizophrenia and psychotic MDD.

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Keywords: Schizophrenia • Negative Symptoms • Positive Symptoms • Major Depressive Disorder • Suicide

Introduction

Schizophrenia is a psychiatric syndrome with involvement of thought, emotion, movement and behavior. Schizophrenia is found in all societies and in different areas in the world with similar incidence and prevalence. Prevalence of the disorder is the same in men and women (1,2). Schizophrenia has a heterogeneous genetic basis (3).

J. Crow in 1980 classified the schizophrenic patients to 2 groups, I and II based on the presence of positive or negative symptoms. Symptoms of Schizophrenia include positive symptoms such as hallucinations, delusions, disorganized behavior and inappropriate forms of thought. Negative symptoms include restricted affect, loss of motivation and poverty of speech, social withdrawal and anhedonia (4).

Suicidal attempt and suicide is significantly prevalent in patients with schizophrenia. Suicidal attempts and suicide have been reported in 20-50% and 10% of patients, respectively (5). This rate is 20 fold in these patients compared to general population. The most important risk factor for suicidal attempts is major depression. Other risk factors include being in early phase of disorder, young age, male sex, being single, severe disorder with multiple recurrences, recent hospitalization, good insight, cognitive impairments, high socio-economic status, poor social functioning and social support (6).

In one study in USA 187 patients, 87 with schizoaffective disorder, 5 with schizophrenia and 33 with schizotypal personality disorder had 19 years of follow-up. Results showed

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that 40% had suicidal thoughts, 33% had suicidal attempts and 6.4% of patients had completed suicide. People with completed suicide had lower levels of negative symptoms and more delusions and complaints than others. Paranoid schizophrenia was associated with high risk of suicide (12%) and patients with deficit schizophrenia and negative symptoms such as lack of motivation and flat affect had lower risk for suicide (1.5%) (7).

In another study on 97 depressed patients and 70 patients with schizophrenia results revealed that positive symptoms such as delusion and hallucination predicted the risk for suicide in schizophrenia and negative symptoms like psychomotor retardation and concrete thinking were associated with suicide risk in depressed patients (8).

In one research in Japan 80 patients with suicide attempts and diagnosis of schizophrenia based on DSM-III-R were assessed. Results showed that suicide can occur in every phase of disorder, wish for death is more important than suicidal attempt and changes in environment like admission in hospital or discharge were stimulants for suicide. Presence of suicidal ideas and anxiety and also birth order (higher risk in middle child) predicted suicidal risk (9).

One study on 1048 patients with psychiatric disorders between ages 18 to 55 indicated that 30.2% had a history of suicidal attempt and 7.2% of patients had a suicidal attempt in past month. Most of these patients had schizoaffective disorder and major depression with psychotic features. People in schizophrenic spectrum had more serious suicides that needed more emergency procedures. Patients with major depression and schizoaffective disorder had the highest risk for suicide and the risk for schizophrenic patients was moderate. Risk factors for suicide in psychotic people were different from general population (10).

Prevalence of suicide in schizophrenic patients has been reported as 10% and it was more prevalent in early phases of disorder (CI= 95%) (11).

In another study in Hong Kong 74 patients with schizophrenia (based on DSMIII criteria) who had died from suicide were compared to 74 patients without history of suicide. Demographic data did not have a significant relation with suicide. Suicide had a significant relation with severity of disorder (more hospital admissions, higher dosage of drugs, earlier diagnosis), history of depression and suicide, last admission for other reasons rather than psychotic symptoms (12).

In one research in Maryland university psychiatric symptoms of schizophrenic patients who had died from suicide were compared to patients who died for other reasons (1989-1998). Suicidal ideas and history of past attempts also depression and positive symptoms were significantly higher in patients with suicide than others (13).

Another study evaluated the psychopathological profile of suicidal schizophrenic patients. Consecutively admitted schizophrenic patients in two groups of suicidal and non-suicidal were assessed at baseline and one year later for demographic and psychopathological features. Hopelessness and lower negative Symptoms identified most of the suicidal (66.7%) and non-suicidal (70%) patients (14).

A follow-up study assessed the mortality risk in 150 chronic schizophrenic patients, 10 to 14 years after the first evaluation. The absolute mortality rate for suicide was 6.98%. Positive, contrary to negative symptoms could increase the risk of suicide (15).

Although some studies have investigated about the relationship between positive and negative symptoms of schizophrenia and risk of suicide (11-15), there are a few researches about the suicidal risk in patients with major depressive disorder (MDD) with psychotic features and comparing them with schizophrenic patients (8,10).

Considering the high prevalence of suicide in schizophrenic patients and patients with Psychotic MDD and the importance of knowing its related factors for risk assessment and using preventive strategies, the present study was designed. The main object of this research was to determine the relationship between positive and negative symptoms of patients with schizophrenia and Psychotic MDD and suicidal history and risk in admitted patients in Ibne-sina hospital, Mashhad-Iran.

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Materials and Methods

The present study was a cross-sectional research on patients who were admitted in Ibne-Sina hospital of Mashhad during 2006-2007 years. The sample included 65 patients with schizophrenia compared to 65 patients with major depressive disorder with psychotic features that were randomly selected from the list of patients. Diagnoses were made based on DSM-IV-TR criteria. Written informed consents were obtained from patients and their guardians before entering into the study. Demographic characteristics were collected with a questionnaire including age, sex, marital status, education, job, duration of disorder, number of hospitalizations, history of substance abuse and medical diseases.

Patients were also evaluated using positive and negative syndrome scale (PANSS) (16). PANSS has been designed to measure severity of psychopathology in adult patients with psychotic disorders (including schizophrenia and psychotic depression), emphasizes positive and negative symptom dimensions (5,17-19). Schizophrenia and psychotic MDD were classified to 2 types: with predominant positive symptoms and negative symptoms based on this scale.

All the patients were assessed with the California risk estimator for suicide, which designed for assessment of suicidal risk in high risk adults from 18 to 70 years old age like patients with severe depression, suicidal ideas or impulses or recent attempts (20). California test has 25 items including age, job, sexual desires, income, financial and recent stressors, sleep hours at night, weight changes (gaining or losing weight more than 10% of previous weight) and paranoia, past suicidal attempts, number of hospitalizations, results of past efforts for saving, family history of psychiatric disorders and reaction to interview. In a pilot study on 38 patients (17 schizophrenia and 21 Major depression), Test-retest (after one week) reliability was 0.76 and internal consistency (Cronbach's Alpha) was 0.74. History of suicidal attempts were obtained from interview, past files and California test for patients in both groups. Collected information were analyzed using SPSS 11/5 version by t-test, chi-square and ANOVA and Pearson correlation test.

Results

In the both groups with schizophrenia and major depressive disorder number of men and women were 42 (64.6%) and 23 (35.4%), respectively. Age, number of hospitalizations and duration of the disorder are illustrated in table 1.

Table 1: Mean (±SD) of Age, Number of Hospitalizations and Duration of Disorder in Two Groups

	Schizophrenia Mean ± SD	Major Depressive Disorder Mean ± SD
Age	33 ± 9.7	38.9 ± 9.1
Number of hospitalizations	2.9 ± 1.8	3.7 ± 1.7
Duration of illness	67.4 ± 43.9	77.5 ± 33.1

There was a significant relation between positive symptoms (e.g. delusions, hallucinations) and suicidal risk in men ($r=0.659$, $p<0.0001$) and women ($r=0.801$, $p<0.0001$) with schizophrenia. In other words, patients with more positive symptoms had higher risk for suicide.

Negative symptoms in men ($r= -0.52$, $p<0.0001$) and women ($r= -0.556$, $p<0.006$) also had a significant but reverse relation with suicidal risk. Male and female schizophrenic patients with more negative symptoms (e.g. flat affect, lack of motivation) had lower risk for suicide (table 2).

General psychopathology in men ($r= 0.18$, $p<0.24$) and women ($r= -0.18$, $p<0.407$) with schizophrenia did not have a significant relation with suicidal risk (table 2).

Table 2: Correlation between PANSS and Suicidal Risk in Schizophrenic Patients

		†SR Men	SR Women	SR Total
‡Pos	r	0.659	0.801	0.708
	p	0.0001	0.0001	0.0001
§Neg	r	-0.52	-0.556	-0.529
	p	0.0001	0.006	0.0001
‖GP	r	0.18	0.182	0.011
	p	0.24	0.407	0.928

†SR = Suicidal Risk
‡Pos = Positive Symptoms,
§Neg = Negative Symptoms,
‖GP= General Psychopathology

There was a significant relation between positive symptoms and histories of suicidal attempts (based on information in the files,

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interview and California test) in patients with schizophrenia (r=0.55, p<0.0001). Patients with more positive symptoms had more suicidal attempts. Negative symptoms had a significant reverse relation with histories of suicidal attempts (r=-0.512, p<0.0001). Patients with more negative symptoms had less suicidal attempts.

There was a significant reverse relation between positive symptoms and suicidal risk (r=-0.26, p<0.036) in patients with psychotic major depressive disorder (MDD). It means that MDD patients with more positive symptoms had lower suicidal risk. Negative symptoms did not have a significant relation with suicidal risk (r=-0.24, p<0.06). General psychopathology in men and women with psychotic MDD did not have a significant relation with suicidal risk (Table 3). Also there were no significant correlation between positive and negative symptoms with histories of suicidal attempt in psychotic depression group (r= 0.19, p<0.13 and r= –0.3, p<0.77 respectively). Rates of suicide attempt in schizophrenia and major depression group are illustrated in table 4.

Table 3: Correlation between PANSS and Suicidal Risk in Psychotic MDD Patients

		†SR Men	SR Women	SR Total
‡Pos	r	-0.338	-0.173	-0.26
	p	0.029	0.430	0.036
§Neg	r	-0.273	-0.161	-0.24
	p	0.080	0.080	0.06
‖GP	r	-0.078	0.177	0.0006
	p	0.623	0.418	0.959

†SR = Suicidal Risk
‡Pos = Positive Symptoms,
§Neg = Negative Symptoms,
‖GP= General Psychopathology

Table 4: Rate of Suicide Attempts in Schizophrenia and Major Depression Group

	Frequency of Suicide Attempts	Number of Patients
schizophrenia	0	29
	1	13
	2	11
	3	7
	4	2
	5	2
	6	1
Major depression	0	27
	1	18
	2	10
	3	6
	4	3
	5	1

Discussion

The present study indicated that schizophrenic patients with more positive symptoms had more suicidal risk and past suicidal attempts. Positive symptoms like hallucinations, delusions and paranoia, which are seen especially in paranoid schizophrenia results in hyper arousal and anxiety about persecutory ideas and acting on commentary hallucinations.

Our study indicated that in patients with psychotic major depressive disorder (MDD) more positive symptoms like irritability, anxiety, restlessness and paranoia, assessed by PANSS, were associated with lower risk for suicide. MDD patients with more Negative symptoms like deficits in interpersonal relations, blunted affect and psychomotor retardation had a slightly higher risk for suicide but it did not reach to a significant point. These results in patients with MDD are in contrast to the findings in schizophrenic patients.

Results of the present study are consistent with findings of some of previous studies. For example in a study on 97 depressed patients and 70 patients with schizophrenia results revealed that positive symptoms such as delusion and hallucination predicted the risk for suicide in schizophrenia and negative symptoms like psychomotor retardation and concrete thinking were associated with suicide risk in depressed patients (8). In another research in USA on 187 patients with schizophrenia in19 years of follow-up, showed that people with completed suicide had lower levels of negative symptoms and more delusions than others. Paranoid schizophrenia was associated with high risk of suicide (12%) and patients with deficit schizophrenia and negative symptoms such as lack of motivation and flat affect had lower risk for suicide (1.5%) (7).

Two other studies with 1 year and 10-14 years of follow-up of schizophrenic patients also indicated that lower negative and higher positive symptoms were related to higher suicidal risk (14,15).

Insight into illness and its social consequences is closely tied to positive Symptoms of schizophrenia (18). Patients with positive symptoms have more insight and better premorbid functioning in different areas than other patients. They also might have deeper

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understanding about the chronic and deteriorating nature of the schizophrenia. Therefore, they are more vulnerable to depression and have high risk for suicide.

This study showed that negative symptoms which are seen mostly in residual and deficit schizophrenia had a significant reverse relation with suicidal risk and history of suicidal attempts. Patients with more negative symptoms had lower risk of suicide and less suicidal attempts.

MDD patients with psychotic features were different from patients with schizophrenia and positive symptoms in them were associated with lower risk of suicide. The possible mechanisms for these findings should be investigated in future.

Further research is needed to examine these results in larger samples and also for identifying appropriate preventive strategies.

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