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A prospective study of the psychopathological variables associated with suicidality among schizophrenic patients

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Introduction. This study aimed to identify the psychopathological profile of suicidal schizophrenic patients during a period of stability, thereby helping to define the trait aspect of these variables.

Method. Consecutively admitted schizophrenic patients fulfilling criteria for «suicidal» and «non-suicidal» groups were assessed at baseline and one year later for sociodemographic, general clinical and psychopathological features, by the positive and negative subscales of the Positive and Negative Syndromes Scale (PANSS), Calgary Depression Scale, Beck Hopelessness Scale and Amador Insight Scale (first three items).

Results. A total of 57 of 73 patients were available for re-evaluation. The suicidal group showed higher depression and hopelessness scores. Hopelessness and lower negative symptomatology identified most of the suicidal (66.7%) and non-suicidal (70%) patients. Hopelessness was the most important variable for identifying suicidality.

Conclusions. Under conditions of illness stability, this profile complements the acute phase profiles identified by most studies in the literature, and should foster improved risk recognition for targeting preventive interventions.

Key words:
 Schizophrenia. Stable. Suicide. Prospective. Hopelessness. Negative symptoms.

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Estudio prospectivo de las variables psicopatológicas asociadas a tentativas de suicidio en pacientes esquizofrénicos

Introducción. Este estudio se realizó para identificar el perfil psicopatológico de los pacientes esquizofrénicos suicidas en período de estabilidad y contribuir a definir los aspectos de rasgo de estas variables.

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Método. Los pacientes esquizofrénicos que ingresaron consecutivamente y que cumplían criterios de «suicidas» y «no suicidas» fueron evaluados en situación basal y al año, en cuanto a variables sociodemográficas, clínicas generales y psicopatológicas, mediante las subescalas positiva y negativa de la Escala de Síndromes Negativo y Positivo (PANSS), Escala de Depresión de Calgary, Escala de Desesperanza de Beck y Escala de Insight de Amador (primeros tres ítems).

Resultados. Cien y siete de 73 pacientes pudieron ser reevaluados. El grupo suicida mostró mayores puntuaciones de depresión y desesperanza. La desesperanza y la menor sintomatología negativa permitieron identificar a la mayoría de los pacientes suicidas (66,7%) y no suicidas (70%). La desesperanza fue la variable más importante para identificar el riesgo de suicidio.

Conclusiones. El perfil hallado en condiciones de estabilidad clínica complementa el perfil identificado en fase aguda en la literatura y podría permitir una mejora en la identificación del riesgo suicida y orientar intervenciones preventivas.

Palabras clave:
 Esquizofrenia. Estable. Suicidio. Prospectivo. Desesperanza. Síntomas negativos.

INTRODUCTION

Schizophrenia is a serious and highly stigmatizing psychiatric disorder whose consequences are generally devastating for the person and his/her setting¹. Suicide is the most serious consequence and principal cause of premature death in schizophrenia^{1,2}. Schizophrenic patients have a high rate of consumed suicide, recently estimated at 4.9%³ and classically considered to be between 10%-13%^{1,2,4}. In addition, 20% to 55% of the patients make some suicide attempt^{1,5}.

The study of variables associated to suicidal behavior in schizophrenia is a challenge of first priority. The clinical and

sociodemographic variables most related with suicidal behavior are previous suicide attempts^{6,7}, disease duration less than 10 years^{2,8}, recent losses, drug abuse, poor treatment adherence and living alone⁶. However, the sociodemographic profile¹ is common in many non-suicidal schizophrenic patients⁹.

In regards to the psychopathological variables, depression is a frequent phenomenon that may appear in any phase of the schizophrenia¹⁰⁻¹³, with rates ranging from 6%¹⁴ to 75%¹⁵. Both depression¹⁶⁻¹⁸ as well as hopelessness¹⁹⁻²² have been mentioned as important risk factors. Insight, negative symptoms and psychotic symptoms have provided heterogeneous results⁶ and their role is still under debate.

Finally, some authors and our work group have stated that the heterogeneity of the results may be influenced by a real heterogeneity and that there are subtypes of suicidal schizophrenia²³⁻²⁶.

Although prospective studies offer solid findings, few have been conducted up to now⁶. Such studies would help or clarify the «state» or «trait» nature of the psychopathological variables and would make it possible to improve the therapeutic and preventive strategies for the reduction of suicide risk.

This study has aimed to identify a possible psychopathological profile of the suicidal schizophrenic patients in stability period.

METHOD

Patients

A total of 73 acute phase schizophrenic patients were included, 57 of whom could be reevaluated at one year. The acute phase sample was made up of patients diagnosed of schizophrenia according to ICD-10 criteria who fulfilled the criteria defined for the groups established and who were consecutively hospitalized in the Acute Unit of the University Hospital of Canary Islands in Tenerife during a two-year period from 1998 to 2000. Each patient was reevaluated one year after their initial evaluation. The patients were classified into two groups: «suicidal» (patients hospitalized due to suicide attempt and with background of one or more previous attempts) and «non-suicidal» (patients hospitalized for other reasons, with no background of suicide attempts). The previous attempts were used as criterion of the suicidal group since it is an unquestionably accepted non-psychopathological risk factor⁶ and only one suicide attempt would not be sufficient to clearly differentiate both groups. Diagnostic consensus was required between the patient's attending psychiatrist and the investigator. Oral consent was obtained from the patients for their inclusion and it was approved by the hospital's ethics committee.

«Suicide attempt» was defined as any type of self-inflicted injury with which the patient expressed suicide intentionality, or when the psychiatrist considered that suicide was the goal, although the patient did not clearly express it. Those who had inflicted self-injuries but whose purpose was not death were not included.

The study corresponding to the acute phase has been published previously²⁴. Thus this present work corresponds to the reevaluation at one year.

Since the purpose of the reevaluation was to perform it under stability conditions, we defined hospitalization for psychiatric reasons in the 6 months prior to or in the month following reevaluation as exclusion criterion. Those patients from the non-suicidal group who had made an attempt within the time up to reevaluation were also excluded as they did not fulfill the criteria defined for the non-suicidal group.

The total samples in acute phase and in reevaluation at one year were, respectively: total sample (n = 73, n = 57 [78.1%]), «suicidals» (n = 36, n = 27 [75%]), «non-suicidals» (n = 37, n = 30 [81.1%]). Reasons for non-re-evaluation were: fulfilling exclusion criteria (n = 7), patient refusal (n = 3), contact impossibility (n = 3) and death (suicide, n = 3). In the reevaluated sample (n = 57), most were men (n = 47; 82.5%), single (n = 49; 86%), unemployed (n = 49; 86%), with primary education (n = 40; 70.2%), with no family background of suicide (n = 43; 75.4%), without current or past drug consumption (n = 33; 57.9%), only taking antipsychotic medication (n = 46; 80.7%) and reporting adequate treatment compliance (n = 56; 98.2%). Median age was 28 years (range: 18-56) and evolution time of 8 years (1.3-28).

Procedure

The acute phase evaluations and re-evaluation at one year were made by the same psychiatrist who was trained in the use of the scales and blind to which group the patient was in. The data about the suicidal attempts was dealt with at the end of the clinical evaluation. Sociodemographic variables (age, gender, civil status, work activity, educational level and family background of suicide), general clinical variables (previous suicide attempts, current or past drug abuse or dependence, evolution time, treatment and compliance) and psychopathological variables were assessed in both evaluations.

Depression was evaluated using the Calgary Depression Scale. Recommended cut-offs were: 0-5 (no depression) and 6-27 (depression)²⁷. Hopelessness was evaluated using Beck's Hopelessness Scale, that has been widely used in studies of schizophrenic patients, with recommended cut-offs of 0-3 (none or minimum), 4-8 (mild), 9-14 (moderate) and 15-20 (serious)²⁸. Insight was evaluated using the first three items of the Amador Insight Scale, which evaluate general

awareness of the disease²⁹. There are no cut-offs for this scale: the greater the score, the lower the insight. Psychotic symptoms and negative symptoms were evaluated using the positive and negative subscales of the Positive and Negative Syndromes Scale (PANSS)³⁰.

Statistical analysis

The continuous variables were described using centralization and dispersion indexes: arithmetic mean, standard deviation, median and range. Qualitative variables were studied by analyzing absolute frequency of the appearance of each one of the categories and the relative frequencies. Normality of the continuous variables was verified with Kolmogorov-Smirnov Z statistics with Lilliefors significance correction.

The categorical data were compared with the chi-square test or Fisher's exact correction test when necessary. Differences in continuous variables according to groups were compared with the Student's *t* test for equality of means in independent samples or its alternative test, the non-parametric Mann-Whitney U test. Correlation between psychopathological variables in the suicidal group was evaluated with Pearson's correlation coefficient or its alternative, Spearman's rho non-parametric test.

Multivariate logistic regression models were constructed with the significant variables in the bivariate analysis or with a tendency ($p < 0.10$) to significance to evaluate the contribution of each one of them in the likelihood of suicide attempt. The odds ratio (OR) and its 95% confidence interval (95% CI) were calculated to evaluate independent risk of the explanatory variables.

Statistical significance level was established for a $p < 0.05$. Data was analyzed with the SPSS version 12 statistical program.

RESULTS

Differences between the groups

Statistically significant differences were found in the depression and hopelessness scores, these being greater in the suicidal group. We also found a tendency to significance in the negative symptoms, with a lower score in the suicidal group (table 1). The suicidal group had a median of 5 (1-19) on the Beck Hopelessness Scale versus a median of 3 (0-18) in the non-suicidal group (fig. 1). The suicidal group had a mean of 18 ± 7.5 on the PANSS negative subscale while the non-suicidal one had a mean of 21.4 ± 7.1 . No significant differences were found between the groups in sociodemographic and general clinical variables (tables 2 and 3).

	Suicidal (n = 27)		Non-suicidal (n = 30)		p
	Median	Range	Median	Range	
Calgary Depression Scale	3	(0-17)	1	(0-10)	0.02
Beck Hopelessness Scale	5	(1-19)	3	(0-18)	0.02
Amador Insight Scale	6	(3-11)	6.5	(3-15)	0.78
	Median	SD	Median	SD	p
Positive PANSS	13.9	6.0	12.2	4.2	0.22
Negative PANSS	18.0	7.5	21.4	7.1	0.09

Amador Insight Scale: first three items of SUMD (general awareness of disease); SD: standard deviation; PANSS: Positive and Negative Syndrome Scale.

Multivariate analysis

After the multivariate analysis, the variables that remained in the equation were Beck Hopelessness Scale (OR: 1.29;

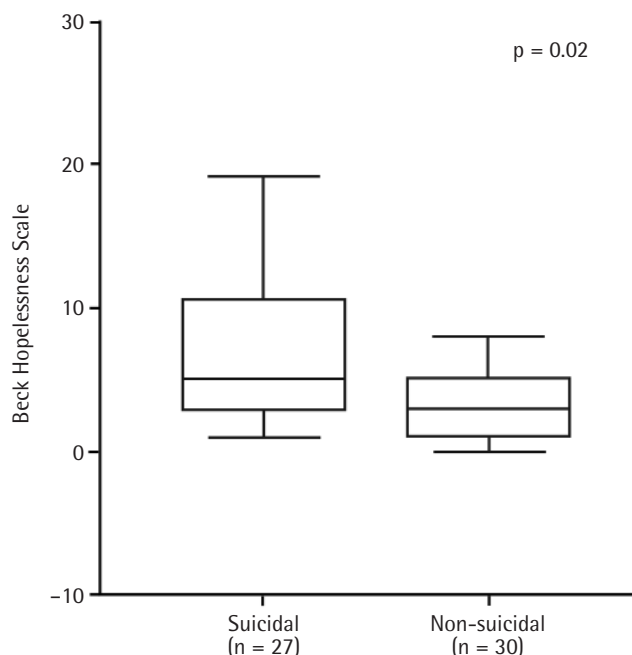


Figure 1 Beck Hopelessness Scale. Sample re-evaluated at one year.

Table 2	Sociodemographic evaluation scales. Sample re-evaluated at one year				
	Suicidal (n = 27)		Non-suicidal (n = 30)		p
	n	%	n	%	
Gender					0.49
Man	21	77.8	26	86.7	–
Woman	6	22.2	4	13.3	–
Civil status					0.26
Married	2	7.4	6	20.0	–
Others	25	92.6	24	80.0	–
Work status					0.71
Active	3	11.1	5	16.7	–
Unemployed	24	88.9	25	83.3	–
Level of studies					0.98
Primary	19	70.4	21	70.0	–
Secondary or higher	8	29.6	9	30.0	–
Family background of suicide*					0.14
No	18	66.7	25	83.3	–
Yes	9	33.3	5	16.7	–
	Median	Range	Median	Range	p
Age (years)	31	(18-56)	28	(23-56)	0.24

*Family background of suicide: background of suicide (attempt or consumed suicide) in first and second degree relatives.

95% CI: 1.1-1.5) and the negative subscale of PANSS (OR: 0.87; 95% CI: 0.8-0.96). These two variables identified 66.7% and 70% of the suicidal and non-suicidal patients, respectively.

Hopelessness was the variable that contributed most to the model. It alone identified 48.1% and 76.7% of the suicidal and non-suicidal patients, respectively.

Associations between psychopathological variables

In the suicidal group, the Depression Scale had a strong direct correlation with the Beck Hopelessness Scale (r_s : 0.78; $p < 0.001$). We also found a direct correlation between the positive PANSS and Hopelessness (r_s : 0.43; $p = 0.027$), Depression (r_s : 0.42; $p = 0.028$), Insight (r_s : 0.53; $p = 0.004$) and the negative PANSS (r : 0.41; $p = 0.033$). Finally, we found a direct correlation between the negative PANSS and Hopelessness (r_s : 0.50; $p = 0.008$) and Depression (r_s : 0.67; $p < 0.001$).

Table 3	General clinical characteristics. Sample re-evaluated at one year				
	Suicidal (n = 27)		Non-suicidal (n = 30)		p
	n	%	n	%	
Toxic consumption*					0.46
No	17	63	16	53.3	–
Yes	10	37	14	46.7	–
Compliance					0.47
No	1	3.7	0	0	–
Yes	26	96.3	30	100	–
Treatment					0.06
Antipsychotic	19	70.4	27	90	–
Mixed**	8	29.6	3	10	–
	Median	Range	Median	Range	p
Evolution time (years)	11	(1.3-28)	5.5	(1.8-21)	0.10

*Toxic consumption: dependence or harmful consumption of toxics, current or in the past. **Mixed treatment: antipsychotic and antidepressants or antipsychotics and mood stabilizers.

DISCUSSION

In this study of schizophrenic patients reevaluated in stability period, one of the main findings was that hopelessness and fewer negative symptoms made it possible to identify a high percentage of the suicidal (66.7%) and non-suicidal (70%) subjects. The suicidal ones had more depression and hopelessness than the non-suicidal ones. The finding of greater depression and hopelessness coincides with the results of most of the studies, that indicate both as risk factors. High rates of depression, between 59%³¹ and 64%¹⁶ and a high OR for depression^{17,32} were found in retrospective studies on schizophrenic patients with suicide consumed. In regards to hopelessness, some authors have postulated that it is an essential link between depression and suicide^{20,22,33}. Others have found greater hopelessness in schizophrenic patients with a background of suicide attempt²², or in patients with suicide consumed several years after the evaluation¹⁹.

Although depression and hopelessness are accepted risk factors, few authors have studied the characteristics of trait versus state of these variables or the relationship between them. It has been indicated that the greater hopelessness in schizophrenic patients who have had a suicide attempt is independent of the proximity in the time of evaluation regarding the attempt³⁴. In a prospective study of patients with major affective disorder, Young et al.³⁵ stated that ho-

pelessness has a component of trait and that baseline hopelessness predicts future suicide attempts. Along this same line, the variable that best identified suicides in our acute phase study was depression²⁴, and in the present study in the stability period, it is hopelessness. Thus, although hopelessness and depression have components of trait and state, and both are risk factors for suicide in schizophrenia, the trait component seems to predominate in hopelessness and the state one in depression.

In regards to the relationship between hopelessness and depression, it should be stated, in the first place, that hopelessness is included in the definition of depression, given that it may be one of its symptoms. As to the relationship between hopelessness a depression, it should first be pointed out that hopelessness is folded into the definition of depression. Rarely found in the absence of sadness, hopelessness and depression normally coexist.

The finding of a correlation between hopelessness and depression in both studies, the acute phase²⁴ and in stable patients, suggests that both variables may belong to a same construct. It has been hypothesized that hopelessness and depression form a part of a continuum that goes from psychological vulnerability, that favors demoralization as a form of hopelessness, and that frequently results in depression³⁷. Other authors have stated that the emergence of depression produces an increase in hopelessness³⁸. It is likely that there is a cognitive scheme of hopelessness-depression in a group of schizophrenic patients.

Negative symptoms were the other psychopathological variable that made it possible to identify the suicidal schizophrenic patients in this study. The suicidal group had fewer negative symptoms than the non-suicidal group. Our findings coincide with those of other authors who have found negative symptoms as a protecting factor^{21,39}. Fenton considers that «deficit» schizophrenic patients have lower suicidal risk because their cognitive deterioration hinders awareness of the disease²¹, and that certain negative symptoms, such as affective flattening, indifference towards the future and anhedonia, play a protective role against painful experiences such as depression, and produce a tendency to passivity^{21,26}.

Other authors consider the negative symptoms as risk factors, given that they favor hopelessness or depression through the social and performance deterioration produced⁴⁰ or due to painful insight on them⁴¹. We have found correlations of the negative PANSS with hopelessness and depression. The first was a moderate correlation and the second could be attributed to the overlapping and difficulty of the differentiation between the negative symptoms and depressive ones^{42,43}.

We have not found any differences in insight in this study between the groups analyzed nor any correlations

with depression or hopelessness. Insight and its relationship with suicide are complex phenomena and have provided heterogeneous findings⁶. Some authors have stated that the impact of insight that favors depression is more important in the acute phase⁴⁴, and others have found a direct association between insight at 6 months of the first episode and depression and suicide attempts at 4 years⁴⁵. On the other hand, it has been stated that an increase of insight related with response to treatment is associated to fewer suicidal behaviors⁴⁶. Prospective studies that also evaluate psychological aspects of insight, as the «evaluation of psychosis» or its «coping style»^{37,47} are still necessary to clarify the role of insight in suicide of the schizophrenic patient.

Although some authors have proposed psychotic symptoms as a suicide risk factor, given that they favor other symptoms such as anxiety⁴⁸ or hopelessness⁴⁹, we have not found significant differences between both groups in the psychotic symptoms. The fact that the evaluation was made in a period of stability may have influenced the absence of significant differences. However, we found a correlation between positive PANSS and depression and hopelessness. This finding coincides with the idea of Shuwall and Siris⁵⁰ that psychotic symptoms may be associated to high levels of suicidal ideation in patient with hopelessness and baseline depression. We have not found significant differences in any of the sociodemographic variables. This finding coincides with those of most of the authors who have extensively studied patients in acute phase^{22,51,52} and with those of our work group, in the acute phase²⁴.

Our study has several limitations. We have not evaluated the psychological aspects related with the cognitive scheme of hopelessness-depression that we proposed or those related with the coping strategies of psychosis. The evaluation of these aspects would be very interesting for future studies. On the other hand, we have not evaluated the biological variables. These could be influencing our psychopathological findings or psychological hypotheses.

In conclusion, suicidal schizophrenic patients in stability period had greater hopelessness and depression than the non-suicidal ones. The variables that best identified the suicidal versus non-suicidal were hopelessness and fewer negative symptoms. Negative symptoms seem to behave as a protective factor. Although both depression and hopelessness seem to have trait and state components, the state component predominates in depression and that of trait in hopelessness. Identification of a psychopathological profile in suicidal schizophrenic patients in stability complements the finding in acute phase and could contribute to improve the identification of the patient with suicidal risk and the adoption of preventive measures.

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