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A Family Study of Psychotic Symptomatology in Schizophrenia, Schizoaffective Disorder, Unipolar Depression, and Bipolar Disorder

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Summary. An evaluation was made of schizophrenics (140), schizoaffectives (40), unipolar depressives (59), and bipolars (30), and their relatives who had a chart diagnosis of psychosis or depressive neurosis. The purpose was to determine whether the psychosis (delusions and hallucinations) was transmitted independently of the illness itself. If this were true, there would be an excess of pairs of probands and relatives both positive for psychosis and pairs of relatives and probands both negative for psychosis when compared to relatives and probands who were not concordant for the variable. This was found to be true in schizophrenia and schizoaffective disorder and is probably the result of the simple transmission of an illness which includes the presence of psychotic symptoms in the definition. Thus, this would be a manifestation of the genetic propensity in schizophrenia. For the affective disorders there was no evidence that psychotic probands were more likely than the nonpsychotic to have psychotic relatives. So far the reason why some patients have psychosis and others not in the affective disorders remains unexplained.

Key words: Schizophrenia – Schizoaffective disorder – Affective disorders – Independent transmission of psychosis – Genetics and psychosis

Introduction

In a previous paper (Winokur et al. 1985), we presented data indicating that psychotic symptoms (defined in this paper as delusions and/or hallucinations) were common in unipolar depressives (48%) and bipolar patients (42%), as well as almost always seen in schizophrenics and schizoaffectives. For schizophrenia and schizoaffective disorder, the presence of psychotic symptoms is part of the diagnosis, of course. Though all diagnostic groups showed delusions and hallucinations, there was a qualitative difference. Mainly, these symptoms were mood congruent in the unipolars and bipolars, and mood incongruent in the schizophrenics. The schizoaffectives had both types of symptoms at the same time. For all of the diagnoses together, about 18% of patients had both types of symptoms, but this was mostly seen in schizoaffectives.

The mixture of affective and mood incongruent psychotic symptoms in the same patient creates difficulty in psychiatric diagnosis. This phenomenon has led to the use of such terms as schizoaffective disorder, atypical psychosis, reactive psychosis, and cycloid psychosis. All of these terms are used to describe patients who in general have a remitting illness, and who have depressive and/or manic symptoms, as well as delusions and/or hallucinations. To compound the problem, it is usually accepted that some manias and depressions may show delusions or hallucinations. Ordinarily, these are mood congruent, i.e., consistent with the euphoric or depressed mood of the individual, e.g., sin, grandiosity, guilt, special descent, but not always.

The presence of these symptoms can be explained in a variety of ways. Of course, it is conceivable that a person with a mixed genetic background, i.e., schizophrenic and affective, might have both schizophrenic and affective symptoms. This seems unlikely in that mixtures of psychotic and affective symptoms are seen too frequently to be explained simply by a concatenation of two genetic backgrounds. A second possibility is that the mixtures of affective and psychotic symptoms (both congruent and incongruent) denote a separate illness, an illness which is qualitatively different from either bipolar or unipolar disorder or schizophrenia. One would expect that probands who have this kind of mixture would then breed true. In other words, their family members would be heavily loaded with the same mixed clinical pictures. This has been found in some cases (Mitsuda 1962; Leonhard 1934), but absent in other cases (Winokur 1974; Angst and Scharfetter 1979). A third possibility is that all patients with mixtures belong to either the affective illnesses or the schizophrenic illnesses. Thus, some patients with a mixture would, in fact, be schizophrenic, but in other cases the patients would be properly diagnosed as having either bipolar or unipolar affective disorder. A recent study by Pope et al. (1980) suggests that schizoaffective manic patients and bipolars essentially have the same illness. In a study of ill sibling pairs, Tsuang (1979) demonstrated that there was a deficit of schizoaffective-schizoaffective pairs, and the expected number of schizoaffective-affective pairs, and schizoaffective-schizophrenic pairs. This study indicates that the schizoaffective or mixed picture was generally associated familially with either schizophrenia or, more commonly, with affective disorder.

Angst et al. (1981) and Coryell et al. (1982) present data suggesting that depressions with mood incongruent features may be a mixed group of patients, some related to the affective disorders and others related to schizophrenia. Currently, this seems to be an appropriate explanation, although it is not possible to completely eliminate the possibility that there is a third, nonaffective, nonschizophrenic psychosis.

One hypothesis that might clarify the issue would be that psychotic symptomatology is independently transmitted from the illness itself. In other words, an individual might have a unipolar depression, for example, transmitted from a parent. The propensity for psychotic symptomatology, i.e., delusions or hallucinations, might be transmitted independently of the unipolar illness itself. As a result, some members of the family would be ill and psychotic, whereas other members of the family would be ill but not psychotic. Starting with a proband who has a remitting illness that shows no evidence of psychosis, we would predict that ill family members would be relatively unlikely to show psychoses themselves. Alternatively, if the index case had started with psychotic symptomatology, we would predict that a high proportion of ill family members would also show psychotic symptomatology.

In studying family pairs, we would then expect the number of pairs concordant for psychosis, and concordant for nonpsychosis, to be higher than the number of pairs in which the proband had psychosis and the relative lacked psychosis, or the relative had psychosis and the proband lacked psychosis.

Methodology

These patients are part of a large study of 269 probands who had a diagnosis of schizophrenia, schizoaffective psychosis, bipolar affective disorder, or unipolar affective disorder. Both the entire group of 269, as well as subgroups with schizoaffective, bipolar, unipolar of schizophrenic diagnoses, are presented here. The probands were diagnosed using the criteria of the international classification of diseases (World Health Organization, 1977). Further methodology has been described in other publications (Scharfetter et al. 1976; Scharfetter and Nüsperli 1980).

There were 33 hebephrenics, 38 catatonics, 69 paranoids (total 140 schizophrenics), 40 patients with schizoaffective psychosis (34 manic, 6 depressed), 59 patients with unipolar affective disorder, and 30 with bipolar affective disorder. Information was available on 1577 out of 1649 first-degree relatives. This report deals *only* with both primary and extended relatives for whom a psychiatric record existed and in whom the diagnosis of either schizophrenia, affective psychosis, paranoid state, other psychosis, or depressive neurosis was made.

Results

Table 1 presents the frequencies of delusions and hallucinations, both mood congruent and incongruent, in the probands, their primary relatives, and their extended relatives. Extended relatives included half-siblings, grandparents, uncles and aunts, nieces and nephews, cousins, and grandchildren. There are some differences in the frequencies between related groups. Though unsystematic congruent delusions are seen as frequently in all three groups, incongruent unsystematic delusions are more frequent in probands, and systematic congruent delusions are clearly more frequent in both primary and extended relatives. Incongruent auditory hallucinations and visual hallucinations are seen more in probands than relatives.

Of the 269 patients, 22% had no psychotic symptoms (delusions a/o hallucinations). Of the 350 first-degree and extended relatives (who possessed psychiatric records and had diagnoses of schizophrenia, paranoid states, affective psychoses and other psychoses), 34% had no psychotic symptoms. Thus, the ascertainment of the relatives does not seem to be due to an excess of psychotic symptoms which brought them to the attention of the treatment facilities. Fifteen percent of the probands had only mood-congruent psychotic symptoms, as opposed to 26% of the relatives. For mood-incongruent symptoms, 64% of the probands were positive as opposed to 40% of the relatives. In this last case, the presence of mood-incongruent symptoms took precedence over mood-congruent symptoms; therefore, some of those rated in the group with mood-incongruent symptoms also had mood-congruent symptoms.

Prior to separating the probands into those with schizoaffective disorder, unipolar disorder, bipolar disorder, and schizophrenia, we evaluated concordance between probands and their primary relatives on the variable of a presence or absence of psychotic symptoms. In the situation where more than one relative per proband with a record of either schizophrenia, unipolar or bipolar disorder or other psychoses was available, the most positive finding was accepted as typical of all ill relatives. In other words, if an individual proband had three relatives that had records and one of these records showed psychotic symptoms, the comparison of pairs was based on the fact that the relative was positive. Table 2 gives these results. In the primary relative comparison there are 106 pairings (only 106 probands had relatives with records). Of these, 68 pairings (64%) are either pairings of nonpsychotic-nonpsychotic or psychotic-psychotic types. Thirty-six percent of the pairings are either type of psychotic-nonpsychotic. The difference is 28% ($P < 0.05$ by McNemar's test).

Because of the fact that this group contains a large number of chronic schizophrenics, and in this group there is known to be a genetic factor, it is possible that the reason for the positive finding is circular in that the diagnosis of schizophrenia which

Table 1. Frequency of psychotic symptoms in probands, primary and extended relatives (all relatives had psychiatric records)

	Probands		Primary relatives		Extended relatives	
N	269		170		180	
Type of psychotic symptom	*N*	(%)	*N*	(%)	*N*	(%)
Unsystematic delusions, congruent	77	(29)	48	(28)	59	(33)
Unsystematic delusions, incongruent	169	(63)	74	(44)	56	(31)
Systematic delusions, congruent	2	(1)	24	(14)	29	(16)
Auditory hallucinations, congruent	22	(8)	30	(18)	41	(23)
Auditory hallucinations, incongruent	119	(44)	49	(29)	39	(22)
Visual hallucinations, congruent	5	(2)	26	(15)	33	(18)
Visual hallucinations, incongruent	53	(20)	11	(6)	10	(6)
Other hallucinations, congruent	13	(5)	28	(16)	33	(18)
Other hallucinations, incongruent	76	(28)	22	(13)	14	(8)

Table 2. Psychotic symptoms (delusions and hallucinations) in 269 probands and first-degree relatives

	Relatives	
	No psychotic symptoms	Presence of psychotic symptoms in at least one family member
Probands		
No psychotic symptoms	13 (52%)	12 (48%)
Presence of psychotic symptoms	26 (32%)	55 (68%)

McNemar Test – $P < 0.05$

Table 3. Similarities in 399 family pairs for presence (+) or absence (−) of psychotic symptoms by diagnosis

	Proband − Relative −	Proband − Relative +	Proband + Relative −	Proband + Relative +
Schizophrenia (169 pairs)	6	3	53	107
Schizoaffective (93 pairs)	3	7	33	50
Unipolar (94 pairs)	28	25	22	19
Bipolar (43 pairs)	11	12	12	8

runs in families is made on the basis of delusions and hallucinations to some extent. As a consequence, it is necessary to remove patients with a diagnosis of chronic schizophrenia and evaluate the concordance just for the affective disorders and schizoaffective disorders separately. This was done by a comparison of the proband with each of the relatives. Thus, if there are three relatives, there are three proband-relative comparisons. Each comparison should be considered independent of the other. Table 3 gives the family pairings for the four types of family relationships. For these data, primary and extended relatives with a record diagnosis of depressive neurosis were included and were considered as unipolar depressives without psychotic symptoms. These were added to the primary and extended relatives with records and diagnoses of psychoses.

McNemar tests for the schizophrenics showed a high degree of breeding true ($P < 0.001$), as did the test for schizoaffectives ($P < 0.002$). For the unipolars and bipolars there is no evidence of any excess of pairs that are alike for psychosis and alike for nonpsychosis. Statistically, it may not be appropriate to use the McNemar test for the data in Table 3. Because of the fact that the probands may appear more than one time in the pairs, there is a problem with independence in the test. As a consequence, it was necessary to evaluate the material using the proband only one time. To do this, we used a methodology similar to that in Table 2. All family members who had a record of the psychiatric illness and a diagnosis of psychosis or a diagnosis of depressive neurosis were used. If there were more than one family member per proband who had such a record and met such a diagnosis, the most positive one for delusions and hallucinations was used. Only probands who had a family member that had a chart diagnosis were included in Table 4, which gives the material.

Table 4. Delusions and/or hallucinations (mood congruent and incongruent) in schizophrenia, schizoaffective, and affective disorder. Probands vs relatives (primary and extended) with a diagnosis of psychosis or depressive neurosis[a]

	Proband − Relative −	Proband − Relative +	Proband + Relative −	Proband + Relative +
Schizophrenia (73 comparisons)	2	2	14	55
Schizoaffective (30 comparisons)	0	2	5	23
Unipolar depr. (35 comparisons)	10	10	7	8
Bipolar (15 comparisons)	2	6	4	3
Unipolar + bipolar (50 comparisons)	12	16	11	11

[a] Relative + means that the relatives were scored on the basis of the most positive regarding the presence of delusions and hallucinations
Relative − means that no relative who had a diagnosis of psychosis or depressive neurosis had either delusions or hallucinations

As can been seen from Table 4, the association between psychosis in probands and psychosis in the family is mainly due to the schizophrenic probands and the schizoaffective probands. By the McNemar tests, the material for the schizophrenic probands is significant $P < 0.01$). The association of psychosis in the proband and psychosis in the family seems true also of the schizoaffectives, but the finding does not meet significance. In the combined bipolar and unipolar groups there is no evidence that there is any association between psychosis in probands and psychosis in family members.

Discussion

The schizophrenics and their family members breed true for psychotic symptoms, but this is easily explainable on the basis of the fact that schizophrenia runs in families and the diagnosis is to a large extent made on the basis of the presence of psychotic symptoms such as delusions and hallucinations. The same kind of familial associations for psychotic symptoms was seen in schizoaffectives, but in a previous study of this particular group of patients schizophrenia was quite frequently seen in the family members of the schizoaffective patients. This finding would be consistent with the strong possibility that a large number of the schizoaffectives were, in fact, schizophrenics and that the breeding true of psychosis between family members was simply another example of the fact that there is a familial coincidence in schizophrenia.

The most informative groups for testing the hypothesis of independent transmission of psychotic symptoms are the unipolar and bipolar affective disorder patients. Here, there is no evidence that psychotic symptomatology is seen more frequently in family members of affective disorder probands with psychotic symptoms than is seen in affective disorder probands without the psychotic symptoms. Thus, the reason that some patients with remitting affective illnesses have psychotic symptoms is unexplained, but certainly there is no evidence

that there is independent transmission, i.e., independent from the illness itself, for the presence of psychotic symptoms.

Even though there is no evidence for independent transmission in the unipolar and bipolar groups in this study, there is a suggestion in the literature that transmission of psychotic symptoms may not be the same in all psychiatric illnesses. Research by Hrubec and Omenn (1981) indicates that psychotic symptoms in alcoholics may be transmitted independently of the alcoholism itself. For the schizophrenics this could be the case also but as there is no practical way of determining the presence of schizophrenia without psychotic symptoms, we cannot test the hypothesis. Suffice it to say that in the group where the hypothesis is testable, i.e., the affective disorders, these families seem to function in a different way from alcoholics.

Thus, an effort was made to determine if psychotic symptoms were transmitted within a family independent of the transmission of the illness itself. Patients where it was possible to determine this are either bipolar or unipolar affective-disorder patients. No evidence was found of independent transmission of psychosis. Thus, the genesis of delusions and hallucinations in some patients with affective disorder remains an open question.

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