Eur Arch Psychiatr Neurol Sci (1985) 235:164–170

European Archives of Psychiatry and Neurological Sciences

A Family Hereditary Study of Post-Partum "Psychoses"

J. Schöpf[1], C. Bryois[1], M. Jonquière[1], and C. Scharfetter[2]

[1] Clinique Psychiatrique Universitaire de Lausanne (Director: Prof. C. Müller), Hôpital de Cery, CH-1008 Prilly
[2] Psychiatrische Universitätsklinik Zürich, Forschungsdirektion (Director: Prof. J. Angst), Lenggstrasse 31, CH-8008 Zürich, Switzerland

Summary. A group of 80 women suffering from a severe psychiatric post-partum disorder and hospitalized for the first time in their lives was followed up between 4 and 35 years later. Besides the further evolution of psychic health of the patients, the occurrence of endogenous (i.e., functional) psychoses in first degree relatives was investigated. A global morbidity risk for endogenous psychoses of 10.9% was found, affective psychosis accounting for two-thirds of secondary cases. Subdivision of the sample according to the criterion of absence or presence of further psychotic episodes unrelated to childbirth revealed that first degree relatives of patients with exclusively puerperal decompensations had a low morbidity risk of 2.0%, but relatives of patients with later nonpuerperal episodes of illness one of 15.2%, the difference being statistically significant ($P < 0.002$). This suggests that severe psychiatric disorders occurring exclusively in the post-partum period are nosologically distinct from those followed by nonpuerperal psychotic episodes of illness. Only the latter seem to be related to the traditionally recognized subgroups of endogenous psychoses.

Key words: Post-partum – Heredity – Psychoses

Introduction

Post-partum disorders are defined by their temporal relation to childbirth. The severe manifestations among them include endogenous (i.e., functional) and organic psychoses as well as pronounced forms of "atypical" depressions (Pitt 1968), from which 10% of women suffer in the puerperium. Although presumably nonpsychotic conditions are included, the terms "post-partum psychosis" and "puerperal psychosis" are frequently used synonymously with "severe psychiatric post-partum disorders". This broad definition is also applied here. At present, there is little possibility for their appropriate use in the strict sense. Due to the difficulty of separating individual cases of depression into endogenous and nonendogenous, pure representative samples of post-partum psychoses cannot be established.

There is an obvious association between parturition and severe psychiatric disorders. Kendell et al. (1981) observed a 16-fold increase in the incidence of endogenous psychoses in the 3 months following childbirth in comparison with the average of the 2 preceding years. Other investigators have obtained similar results (Pugh et al. 1963; Paffenbarger 1964). The connection between parturition and psychosis is little understood. It has been speculated that in women with post-partum psychoses abnormalities in the hormonal changes of this particular period occur and that the psychic disorder represents some kind of endocrine psychosis, however no endocrine pathology has so far been identified. Post-partum psychoses are very rarely associated with severe physical illness. For this reason, a significant contribution of organic factors to the etiology can be ruled out in the great majority of cases. Furthermore, there is no empirical evidence that women who develop post-partum psychoses have been exposed to extreme stress during pregnancy or the puerperium, which argues against a primarily psychogenic origin. Some well-known facts show a relation of post-partum psychoses to the traditionally recognized subgroups of endogenous psychoses. (The post-partum psychoses themselves are to be considered as endogenous psychoses because of the absence of organic etiology.) A considerable percentage of women suffer from psychotic episodes unrelated to childbirth in later life (Arentsen 1968; Protheroe 1969; Schöpf et al. 1984); some of them had psychotic decompensations before the post-partum episode of illness (Bratfos and Haug 1966; Reich and Winokur 1970); and the proportion of patients with a positive family history of endogenous psychosis is higher than that found in the general population (see below). There has been much controversy about the question as to the proportion of post-partum psychoses which should be considered as schizophrenia or affective psychosis. It is established today that affective psychosis and probably also schizoaffective psychosis is prone to puerperal decompensations, whereas schizophrenia rather rarely begins or is thereby exacerbated (for a discussion of the literature, see Schöpf et al. 1984).

Although post-partum psychoses are not considered as a separate disease according to the International Classification of Diseases (ICD), this possibility has not been ruled out (Brockington et al. 1981). The "standard stress" of childbirth might provoke a decompensation in some types of psychosis but not in others. Due to our lack of knowledge of the mechanisms involved, there is at present no means of identifying with certainty disease entities within the endogenous psychoses. However, descriptive criteria can serve as an aid. In fact, some features of post-partum psychoses suggest that there are nosological differences to psychoses without puerperal onset. Post-partum psychoses often begin abruptly, an unusual proportion of patients show elements of confusion and, most importantly, the prognosis is definitely better than

Offprint requests to: J. Schöpf at the above address

one would expect according to our knowledge of the course of endogenous psychoses in general. In the three follow-up studies of post-partum psychoses with a catamnestic observation period of up to two decades or longer (Arentsen 1968; Protheroe 1969; Schöpf et al. 1984), the proportion of women with a single remitting episode in life was 54%, 53%, and 33% respectively. In comparison, Angst (1980), in a long-term catamnestic investigation of patients with unipolar endogenous depression, bipolar manic depressive psychosis and schizoaffective psychosis, found 15%, 0%, and 3% respectively. For schizophrenia, Huber et al. (1979), although confirming that the disorder has a more favorable long-term course than thus far believed (Ciompi and Müller 1976) observed that only 22% of patients had a single episode of illness not leading to chronicity and followed by permanent remission. The differences found on the course of illness between post-partum psychoses and endogenous psychoses in general can only be explained to a small extent by the somewhat longer observation time in the last mentioned studies.

Among the patients suffering from post-partum psychosis and later manifesting psychotic relapses, most have episodes unrelated to childbirth (i.e., nonpuerperal relapses), and if they have further children a considerable number have episodes related to childbirth (i.e., puerperal relapses). Probably very few women have only puerperal but no nonpuerperal relapses (Arentsen 1968; Schöpf et al. 1984).

Family heredity studies remain one of the best methods for clarifying the nosological affiliation of subgroups of endogenous psychoses. Very few genetic studies have been performed on post-partum psychoses. Thuwe (1974) has reviewed the older literature. None of the 8 studies cited fulfilled the minimal criteria for defining the percentage of patients with a positive family history of psychosis. "Positive heredity" was found in 36%–65%; however, in 7 studies psychiatric disorders other than psychoses were included; in 3 of them it was not specified whether only first degree or also second degree relatives were taken into account, and in 4 investigations psychoses of pregnancy and post-partum were not separated. More recent studies have confirmed the genetic relation of post-partum psychoses to the traditionally recognized subgroups of endogenous psychoses. Protheroe (1969) divided a group of patients with post-partum psychosis into puerperal affective disorders and puerperal schizophrenia. He considered the morbidity risks obtained for the first degree relatives of the two groups as identical with the ones indicated in the literature for affective psychosis and schizophrenia in general. Whalley et al. (1982) obtained comparable results in a group of women with puerperal affective psychosis. On the other hand, Kadrmas et al. (1979) found for manics with puerperal onset a notable trend towards having fewer affectively ill relatives than nonpuerperal controls.

The present study of 80 women was performed in order to further investigate the genetic relation of post-partum psychoses to the traditionally recognized subgroups of endogenous psychoses. Heredity of psychosis was studied in the sample as a whole and in subgroups established according to three different procedures. According to the authors' knowledge, it is the first genetic investigation in a diagnostically unselected sample of patients with post-partum psychosis in which the distinction between affective psychosis (unipolar and bipolar), schizoaffective psychosis and schizophrenia has been made. The study also includes a separate evaluation of the subgroup of patients with exclusively puerperal decompensations. As in the investigation of Whalley et al. (1982), operationalized diagnostic criteria were used and, as in the study of Protheroe (1969), the psychopathology of the index episode and that of relapses was taken into account for diagnostic classification. Results on long-term evolution of psychic health in an initial group of 57 patients in this combined catamnestic and genetic investigation have already been published (Schöpf et al. 1984).

Method

All women admitted to the Psychiatric University Clinic of Prilly-Lausanne for a post-partum disorder from 1949–1980 were eligible. Patients were included if the post-partum disorder was the first episode of illness requiring psychiatric hospitalisation, the beginning of the illness occurred in the first 3 months after confinement, the patient did not suffer from organic brain disease, and intelligence was not markedly subnormal (corresponding to an IQ of 70 or less). The first part of the investigation (women hospitalised 1958–1977, $n = 57$) was performed in 1982 and the second part (women hospitalised 1949–1957, 1978–1980, $n = 23$) in 1984. This means that the catamnestic observation time was between 4 and 35 years. Information about further psychopathology of the patient and mental diseases in first degree relatives was sought. In the majority of women in the first group this was done by a personal interview. In the second group, the neccessary information was obtained in most cases by telephone and only when essential points could not be clarified in this way was a personal interview held. This simplification of the follow-up investigation was made since it had been seen that, in general, patients gave equivalent information by telephone or personal visit. For patients who were still being treated for psychic disorders, the treating physician—in most cases a psychiatrist—was included in the evaluation. Whenever necessary, additional information was gained from the husband or relatives. All obtainable case records from out-patient services and psychiatric hospitals were consulted. In the few cases in which the treating psychiatrist raised objections to a personal interview, information was given by this colleague, the general practitioner, and relatives. For patients who had died or who were unreachable, we condacted the husband, relatives, and former treating physicians.

Concerning the screening for mental disturbances in first degree relatives, the patients or the principal informant was asked about psychic peculiarities of members of her family of origin (parents and siblings). When necessary, more than one informant was contacted. If there was a suspicion of the occurrence of an endogenous psychosis, the case was further investigated. The same sources of information as for the patients were used.

Diagnostic classification was based on operationalized criteria. These were derived from the Research Diagnostic Criteria (RDC) (Spitzer et al. 1978), which were suitably modified to bring them into line with Bleuler's concept of endogenous psychoses. Only psychotic disorders were taken into consideration. The diagnostic criteria are described in more detail elsewhere (Schöpf et al. 1984). The established system permits diagnoses of episodes of illness and long-term diagnoses to be made in an independent manner. For episodes of illness, five categories were defined: depression, mania, depression with schizophrenic symptoms, mania with schizo-

phrenic symptoms and nonaffective psychotic episode. For the latter category, the term "schizophrenic episode" was not used in order to avoid confusion with schizophrenia as a long-term diagnosis. The four long-term diagnoses were: affective psychosis with the subgroups of unipolar endogenous depression and bipolar manic depressive disease, schizoaffective psychosis and schizophrenia. The category of schizoaffective psychosis was included due to the uncertainty on how to classify the cases with mixed affective and schizophrenic symptoms. For these cases in particular, in which the symptomatology can be purely affective for one episode of illness and schizophrenic with or without affective symptoms for another (Angst et al. 1979), the separation of diagnoses for episodes of illness and long-term diagnoses is of importance. Patients received a long-term diagnosis only if they had nonpuerperal relapses. The diagnosis of affective psychosis was applied if the patient had never had schizophrenic symptoms (except the post-partum episode—see below). Patients in whom schizophrenic symptoms occurred in one or more episodes of illness and who showed a marked affective symptomatology in long-term evolution as well as a certain periodicity or—in cases with one episode—a tendency to remission, the diagnosis of schizoaffective psychosis was used. If in long-term evolution schizophrenic symptoms without affective syndrome dominated, then the case was classified as schizophrenic. Another principle of diagnostic classification was the establishing of long-term diagnosis under exclusion of the puerperal episode of illness. This seems justified since the post-partum episode in some cases had unique clinical characteristics which were never observed at the time of nonpuerperal relapses (Schöpf et al. 1984). There were patients who envinced a depressive or manic syndrome with mood incongruent delusions or hallucinations during the puerperal episode or who had a nonaffective psychotic episode and presented later only decompensations of a purely affective type. It was considered that such women should be diagnosed as suffering from affective psychosis. If these patients did, in fact, suffer from schizoaffective psychosis, they would probably have had schizophrenic symptoms outside the puerperium.

To determine the age-corrected total and morbidity risk figures for first degree relatives, the methods of Strömgren (1935) and Slater (1938) were used:

$$P\,(\text{morbidity risk in \%}) = \frac{n\ \text{secondary cases}}{\text{age-corrected total}} \times 100.$$

The standard error was calculated according to the formula:

$$E = \frac{p\,(100 - p)}{n}$$

The χ^2 method was used in comparing the difference between frequencies of groups.

A total of 87 women fulfilled the inclusion criteria. They represented roughly two-thirds of all admissions for post-partum disorders between 1949–1980. For the patients admitted between 1958 and 1977, it was calculated that 1.1‰ of the confinements in the sector of Lausanne were followed by an admission to the psychiatric hospital, and approximately the same incidence can be assumed for the other time periods of the investigation. Among the 87 patients, 7 had to be excluded. In 5 cases, the present address could not be found, 1 deceased patient had no relative who could be contacted, and another patient—probably a schizophrenic—gave such vague and contradictory answers during the interview that no usable information resulted. The final sample therefore consisted of 80 patients, that is 92% of the original group. Of the 80 women 10 had died, 8 of them by suicide, and for all of them detailed information on the evolution of their psychic health was obtained. Among the remaining 70 patients, 34 were interviewed personally, 32 by telephone, and 4 patients were not contacted personally.

The average age of the 80 patients was 27 years (range 19–40), all but 1 were married at the time of confinement, 69% were primiparous, and the onset of illness had occurred within the first 2 weeks following childbirth in 64%. Two women (2%) had severe physical complications in the puerperium, but only in one case there was definite CNS involvement. Eight patients (10%) had already presented former psychotic episodes which, however, were of moderate severity and did not lead to hospitalisation. For the frequency of diagnoses (post-partum episode of illness, long-term evolution) see Tables 3 and 5.

The 80 patients had a total of 368 first degree relatives (parents and sibs) who had reached the age of risk for endogenous psychoses. Of these relatives 4 could not be included in the genetic evaluation. One father was unknown, in 3 others contact had been lost in early childhood and 1 mother could only be traced up till the age of 47 when the relationship with the patient broke off. With regard to all other first degree relatives information was obtained such that a conclusion on psychic health could be drawn with reasonable certainty. Apart from the exceptions mentioned, the contacts between the patient and her family had not been permanently interrupted. These were favored by the fact that, even after marriage, many patients lived close to their parents and siblings. Furthermore, the occurrence of the psychiatric post-partum disorder seemed to have made psychic health a subject of discussion in several families. Patients were in general well informed about the psychic troubles of their relatives and vice versa. In all but 5 relatives finally considered as suffering from endogenous psychosis, detailed psychiatric case records were included in the diagnostic evaluation.

Results

Among the 364 first degree relatives of the 80 patients, 32 cases of endogenous psychosis were found. Affective psychosis dominated in frequency (21 cases, 14 unipolar depressive, 7 bipolar), followed by schizophrenia (6 cases) and schizoaffective psychosis (5 cases). A positive family history of endogenous psychosis was found in 22 (27.5%) patients. The global morbidity risk for endogenous psychoses in first degree relatives was 10.9%, as indicated in Table 1. It is somewhat higher in female relatives than in males and in siblings than in parents, however the differences were not statistically significant. Table 2 shows the morbidity risks in relatives for affective psychosis, schizoaffective psychosis and schizophrenia.

In Tables 3 to 5, patients are categorised in various subgroups using three different procedures. Due to the small size of the groups, calculations have been limited to the global morbidity risk for endogenous psychoses. Table 3 shows the morbidity risk in first degree relatives of patients classified according to the diagnosis of the post-partum episode of illness. Patients with mania and mania with schizophrenic symp-

Table 1. Empirical global morbidity risk for endogenous psychoses in first degree relatives of women with severe psychiatric post-partum disorders

	Number	Age-corrected total	Secondary cases	Morbidity risk (%)
All first degree relatives	364	292	32	10.9 ± 1.9
Parents	156	146	12	8.2 ± 2.3
Siblings	208	146	20	13.7 ± 2.8
Fathers and brothers	171	140	13	9.3 ± 2.5
Mothers and sisters	193	153	19	12.4 ± 2.7

Table 2. Empirical morbidity risk for affective psychosis, schizoaffective psychosis and schizophrenia in first degree relatives of women with severe psychiatric post-partum disorders

	Secondary cases	Morbidity risk (%)
Affective psychosis	21	7.2 ± 1.5
– unipolar depression	14	4.8 ± 1.3
– bipolar manic depressive psychosis	7	2.4 ± 0.9
Schizoaffective psychosis	5	1.7 ± 0.8
Schizophrenia	6	2.0 ± 0.8

toms have been placed together. Interestingly, not a single affected relative of patients with a nonaffective psychotic episode was found, whereas the morbidity risk in the other diagnostic subgroups was between 14.4% and 14.9%, the difference from each of them being statistically significant at the 1% level. In Table 4 classification was performed according to the long-term diagnosis in patients with nonpuerperal relapses. The cases without nonpuerperal relapses were assigned to the category to which the symptomatology of the post-partum episode corresponded, for example mania to affective psychosis and nonaffective psychotic episode to schizophrenia. In Table 4, a traditional psychiatric classification has been made. The morbidity risk in relatives of patients with affective and schizoaffective psychosis (according to this particular definition) was 13.3% and 16.0% respectively but only 3.4% in relatives of schizophrenics. The difference between the latter group and each of the former ones is statistically significant ($P < 0.05$). In Table 5, two classifications have been made consecutively. First, patients were classified according to the criterion of absence or presence of nonpuerperal relapses. In this way a possible relation between a favorable long-term course and heredity particulars was investigated. Note that for almost all patients without nonpuerperal relapse the post-partum episode was the only decompensation in life; only 1 woman had two puerperal but no nonpuerperal episodes of illness. In the 30 patients without nonpuerperal relapse, there was only 1 with a positive family history of psychosis (she had 2 affected relatives), in comparison with 21 out of 50 in patients with nonpuerperal relapses. The morbidity risk of 2.0% in first degree relatives in the former group was close to that of the general population, whereas it was 15.2% in the latter group. This difference is statistically significant at the 0.2% level. The second classification performed in Table 5 consists of a subdivision of patients with nonpuerperal relapses into the three traditionally recognized subgroups of endogenous psychoses. A high morbidity risk of 18.3% and

Table 3. Empirical global morbidity risk for endogenous psychoses in women with severe psychiatric post-partum disorders classified according to the diagnosis of the index episode

	Number	Age-corrected total	Secondary cases	Morbidity risk (%)
Depression ($n = 34$)	179	132	19	14.4 ± 3.1
Mania, mania with schizophrenic symptoms ($n = 15$)	56	40	6	14.9 ± 5.6
Depression with schizophrenic symptoms ($n = 13$)	52	49	7	14.4 ± 5.0
Nonaffective psychotic episode ($n = 18$)	77	72	0	0

Table 4. Empirical global morbidity risk for endogenous psychoses in first degree relatives of women with severe psychiatric post-partum disorders classified according to the long-term diagnosis (in patients with nonpuerperal relapses) and the diagnosis of the index episode (in patients without nonpuerperal relapse)

	Number	Age-corrected total	Secondary cases	Morbidity risk (%)
"Affective psychosis"[a] ($n = 38$)	186	128	17	13.3 ± 3.0
"Schizoaffective psychosis"[a] ($n = 20$)	82	75	12	16.0 ± 4.2
"Schizophrenia"[a] ($n = 22$)	96	89	3	3.4 ± 1.9

[a] Note that the diagnostic categories established in this Table do not correspond to the definitions of diagnoses in this study in general

18.9% was found in relatives of patients with the long-term diagnosis of affective and schizoaffective psychosis respectively, whereas it was rather low in the family members of schizophrenics (5.8%). None of the differences is statistically significant.

Among the 18 patients with the diagnosis of a nonaffective psychotic decompensation at the post-partum episode (Table 3) and the 30 patients without nonpuerperal relapse (Table 5) there were 11 who fulfilled both criteria negatively related to heredity of psychosis. The morbidity risk for the relatives of the 7 women suffering from a puerperal nonaffective psychotic episode and presenting later on nonpuerperal relapses, i.e. of those fulfilling only the first criterion, was no longer statistically significantly different from that of the individual diagnostic subgroups indicated in Table 3. However, such a difference exists if the three subgroups are put together ($P < 0.05$). The morbidity risk for relatives of the 19 patients fulfilling only the second criterion, i.e. no puerperal relapse, was significantly lower ($P < 0.05$) than that in the group of patients with nonpuerperal relapses. The group differences in heredity indicated in Table 4 are not further analyzed since they can be explained by the results of Tables 3 and 5.

In Table 6, the absolute frequency of affective psychosis, schizoaffective psychosis and schizophrenia in first degree relatives of patients with nonpuerperal relapses classified in the traditionally recognized subgroups of endogenous psychoses with puerperal onset is indicated. Patients with affec-

Table 5. Empirical global morbidity risk for endogenous psychoses in women with severe psychiatric post-partum disorders classified according to long-term evolution

	Number	Age-corrected total	Secondary cases	Morbidity risk (%)		Number	Age-corrected total	Secondary cases	Morbidity risk (%)
Patients with non-pueral relapses ($n = 50$)	252	197	30	15.2 ± 2.6	Affective psychosis ($n = 23$)	128	82	15	18.3 ± 4.3
					Schizoaffective psychosis ($n = 16$)	70	63	12	18.9 ± 4.9
					Schizophrenia ($n = 11$)	54	52	3	5.8 ± 3.2
Patients without non-pueral relapses ($n = 30$)	112	95	2	2.0 ± 1.4					

Table 6. Absolute frequency of affective psychosis, schizoaffective psychosis and schizophrenia in first degree relatives of women with severe psychiatric post-partum disorders classified according to long-term evolution

	First degree relatives with		
	Affective psychosis	Schizo-affective psychosis	Schizo-phrenia
Long-term diagnosis of:			
Affective psychosis ($n = 23$)	11	2	2
Schizoaffective psychosis ($n = 16$)	8	2	2
Schizophrenia ($n = 11$)	1	1	1
Without nonpuerperal relapse, pure depression for the puerperal episode of illness ($n = 14$)	1	—	1
Without nonpuerperal relapse, other diagnoses for the puerperal episode of illness ($n = 16$)	—	—	—

tive and schizoaffective psychosis mainly had relatives suffering from affective psychosis. Affected relatives suffering from schizoaffective psychosis or schizophrenia were evenly distributed over the three diagnostic categories. Homotypical morbidity, i.e., the occurrence of the same type of psychosis in a given family, was found in only 8 of the 21 families with a positive heredity of psychosis.

Some important questions with regard to the distribution of diagnoses in affected relatives could not be evaluated due to the small size of the groups. This particularly concerns the ratio of unipolar depressives to bipolars in different diagnostic subgroups.

Among the 16 female relatives who had had children and been affected by psychosis, 6 (40%) had themselves presented a psychotic post-partum illness.

Discussion

The present investigation reveals remarkable differences in the morbidity risk for endogenous psychoses in subgroups established according to the diagnosis of the post-partum episode and the nonpuerperal course of illness. Table 3 suggests a negative relation between a puerperal nonaffective psychotic episode and heredity of endogenous psychoses. There remains a statistically significant difference when the small subgroup of patients with this diagnosis who had nonpuerperal relapses is compared to the total of patients with a post-partum diagnosis other than a nonaffective psychotic episodes. One might argue that patients with such a kind of psychopathology are to be considered as suffering from schizophrenia, and schizophrenia is generally known to be associated with a lower morbidity risk for endogenous psychoses than affective disorders, but it is unlikely that this is the only reason for the complete absence of secondary cases in this diagnostic group. It seems difficult to find any explanation of the absence of affected relatives other than the presence of the second criterion related to negative heredity in 11 of these 18 patients. A long-term course of illness characterized by the absence of nonpuerperal relapses has been found here to be strongly related to a low heredity of endogenous psychoses (Table 5), and the relation remains present after exclusion of patients fulfilling the just mentioned criterion of a puerperal nonaffective psychotic episode. Most patients without nonpuerperal relapses have—since cases with two or more puerperal decompensation are rare—just one espisode of illness in life, which is a much more favorable course of illness than the one of endogenous psychoses in general.

The fact that the division of severe psychiatric post-partum disorders into a group with nonpuerperal relapses and one without is supported by findings on the heredity of endogenous psychoses in first degree relatives suggests that they represent different disease entities. One part of severe psychiatric post-partum disorders appears to consist of the traditionally recognized subgroups of endogenous psychoses, i.e., affective psychosis, schizoaffective psychosis and schizophrenia with puerperal onset, and the other part of "pure" post-partum disorders, i.e., those with exclusively puerperal decompensations. Little can be said at present about the etiological factors involved. Concerning the subgroup of "pure" severe post-partum depressions, most of them can probably be considered as belonging to the "atypical" post-partum depressions, which presumably have a biologic origin (Pitt 1968); it is difficult to decide on the basis of case records to what extent stressful life events or neurotic mechanisms have contributed to the occurrence of the disorder in these cases.

The diagnostic subgroups in the patients with nonpuerperal relapses were relatively small so that conclusions about

heredity can be drawn only with certain restrictions. In first degree relatives of women suffering from affective psychosis with puerperal onset, the morbidity risk of 18.3% was slightly higher than the one indicated in genetic investigations on affective psychosis in general, using the traditional diagnostic criteria of European psychiatry. Perris (1966) found 12.7% and 15.4% affected relatives for unipolar endogenous depression and bipolar manic depressive psychosis respectively, and Scharfetter and Nüsperli (1980) 15.8% and 12.9%. The studies mentioned were performed on patients of all age groups. All the patients with puerperal onset of affective psychosis studied here were 40 years or younger at the time of the index episode, i.e., they were early onset cases. Since early onset of affective psychosis has been found to be associated with a definitely higher morbidity risk in first degree relatives than late onset (Gershon et al. 1976; Baron et al. 1981), the above comparison values should probably be increased by about 25% to obtain the control value for affective psychosis with early onset in general. After this correction, morbidity risks are very close to the present sample of affective psychosis with puerperal onset. For first degree relatives of patients with schizoaffective psychosis, Angst et al. (1979) found a morbidity risk of endogenous psychoses of 14.8% and Scharfetter and Nüsperli (1980) one of 25.7%, the value of 18.9% found here being in between. A low morbidity risk of 5.8% has been found in the present study for relatives of women suffering from schizophrenia with puerperal onset. The interpretation is difficult, again due to the small size of the group.

The finding that for the total group of 80 patients the majority of affected relatives had affective psychosis and only a few schizophrenia or schizoaffective psychosis corresponds to that anticipated in a sample of psychotic patients with this diagnostic distribution. It is well-known that in families of patients with affective psychosis, mainly affective psychosis is found. Also concerning schizoaffective psychosis, affective psychosis is the most frequent diagnosis in psychotically ill relatives (Angst et al. 1979). The relative rarity of homotypical morbidity in the total group of patients investigated here can be explained partially by the considerable proportion of index cases with schizoaffective psychosis.

A possible way of investigating whether the three endogenous psychoses with puerperal onset are different diseases from the corresponding psychoses without puerperal onset is to determine the proportion of female first degree relatives in this sample who had a severe post-partum decompensation, among all female relatives having given birth to children and being affected by a psychosis. In this investigation, 40% of affected female relatives with children had also had a post-partum decompensation. For comparison, Bratfos and Haug (1966) found 31% for affective psychosis and Reich and Winokur (1970) 40% for bipolar manic depressive psychosis including some cases of schizoaffective psychosis according to our definition. This lack of difference is an important argument against the assumption that affective and schizoaffective psychosis with puerperal onset are different entities from psychoses with nonpuerperal onset. It is also noteworthy that comparison of the course of illness did not reveal any differences (Schöpf et al. 1984).

The morbidity risks for first degree relatives in the diagnostic subgroups of this investigation cannot be compared directly with those obtained by Protheroe (1969), since different classifications were used. Furthermore, Protheroe did not specify the diagnostic criteria. He classified 71% of patients as suffering from puerperal affective psychosis and 29% from puerperal schizophrenia. The morbidity risks for first degree relatives were 6.7% and 9.3% when certain cases were included and 11.7% and 10.4% when certain as well as uncertain cases were included. Protheroe thought that the morbidity risks obtained were not different from those of patients' relatives with nonpuerperal endogenous psychoses. Nevertheless, they were definitely low in the group of puerperal affective psychosis, particularly if one takes into account the effect of early onset on morbidity risk, which Protheroe did not. Generally, Protheroe's results correspond well to the rather low morbidity risk obtained for the total sample investigated here. Whalley et al. (1982) found a 25.6% morbidity risk in the first degree relatives of women with puerperal affective disorder. The authors used the diagnostic criteria of Feighner which do not distinguish endogenous from nonendogenous depression and include many of the latter. For this reason, their results are not comparable with those of the present investigation. Morbidity risks in Whalley's study were identical in patients' relatives and the relatives of the controls, i.e., of women with affective psychosis not of puerperal onset, controls however were significantly older at the first episode of illness. Kadrmas et al. (1979) found a low proportion of patients with a positive family history of psychosis in women with post-partum mania; in addition, post-partum manics had fewer nonpuerperal relapses than controls. These results agree with ours indicating that for post-partum psychoses as a whole some patients have a course of illness identical with that of endogenous psychoses without nonpuerperal onset together with the usual heredity loading, whereas others have no nonpuerperal episode of illness and a negative family history of psychosis. We assume that the results obtained by Kadrmas et al. (1979) are at least partially due to the presence of this last mentioned group.

In this study first degree relatives have not been systematically personally interviewed contrary to many genetic investigations. This procedure might have led to a loss of information and some secondary cases of psychosis might not have been identified, although are not probably in a significant number. The information collection conditions were, on the whole, favorable. Furthermore, the morbidity risks in certain subgroups are rather high so that no lack of knowledge of affected relatives is to be suspected, and no evidence points to the possibility that the difference in heredity in the two groups established according to the nonpuerperal course of illness is anything but the expression of a methodological artifact, i.e., that just the patients with "pure" post-partum disorders—during hospitalisation and at the catamnestic interview—consistently hid important facts on the psychic health of their family of origin or were not so well informed on their relatives as patients with nonpuerperal relapses.

Another point that might be criticized is, perhaps, the choice of the 3-month span following confinement to define the post-partum period. Brockington et al. (1982) think that only those decompensations which begin within 2 or 3 weeks after confinement can be considered as true post-partum psychoses. According to the authors, the strongly increased incidence of psychoses is essentially limited to this period. On the other hand, the epidemiological investigation of Paffenberger (1964) on parapartum disorders shows that the incidence of psychoses tends to be elevated for several months after confinement. Also Dean and Kendell (1981) analyzing the sample for which Kendell et al. (1981) observed a 16-fold

increase in the incidence of psychoses in the 3 months following childbirth in comparison with corresponding periods in the 2 years before, found that a considerable minority of decompensations occurred later than 2 weeks after confinement. Depressions in particular were evenly distributed in time. For these reasons, it seemed appropriate to choose a longer time criterion. The finding of Kendell et al. (1981) on the increased incidence of psychoses says in other words that the proportion of "contaminating" cases, i.e., psychoses which begin in the post-partum period without having in fact a causal relation to it, can be considered, for the 3 months following confinement, as not more than one-sixteenth of all decompensations. Nevertheless, the 2-week criterion might be suitable for identifying particular subgroups of post-partum disorders.

How should a patient who suffers from a severe psychiatric post-partum disorder be diagnostically classified, taking into account the results of the present study? If she has already had psychotic episodes unrelated to childbirth, then—with the very few exceptions of a definitely different etiology—she should be considered as having a new episode of the corresponding psychosis. The situation is more difficult if the episode is the first decompensation for the patient. No criteria can be offered to distinguish safely the three traditionally recognized endogenous psychoses with puerperal onset from "pure" puerperal disorders on the occasion of the post-partum episode. A pragmatical solution based on observations made in the present study is proposed. Almost all "pure" post-partum disorders other than depression started within 2 weeks after confinement and virtually all within 4 weeks. For post-partum depression, no such time limit can be given. If a patient has a first major psychic decompensation other than depression within 4 weeks after confinement or a severe depression within 3 months, then she should provisionally be considered as suffering from a "pure" post-partum disorder, and only if nonpuerperal episodes of illness occur, should be diagnosis of one of the traditionally recognized subgroups of endogenous psychoses be applied. These considerations with regard to the division of endogenous psychoses have few consequences for determining diagnoses according to the 9th version of the ICD. It classifies all episodes of illness—except those with organic etiology—under Categories 295 and 296. For post-partum depressions, a diagnosis other than psychosis can be applied.

References

Angst J, Felder W, Lohmeyer B (1979) Schizoaffective disorders. Results of a genetic investigation. I. J Affect Dis 1:139–153

Angst J (1980) Verlauf unipolar depressiver, bipolar manisch-depressiver und schizo-affektiver Erkrankungen und Psychosen. Ergebnisse einer prospektiven Studie. Fortschr Neurol Psychiatr 48:3–30

Arentsen K (1968) Postpartum psychoses with particular reference to the prognosis. Dan Med Bull 15:97–100

Baron M, Mendlewicz J, Klotz J (1981) Age of onset and genetic transmission in affective disorders. Acta Psychiatr Scand 64:373–380

Bratfos O, Haug JO (1966) Puerperal mental disorders in manic-depressive females. Acta Psychiatr Scand 42:285–294

Brockington IF, Cernik KF, Schofield EM, Downing AR, Francis AF, Keelan C (1981) Puerperal psychosis—phenomena and diagnosis. Arch Gen Psychiatry 38:829–833

Brockington IF, Winokur G, Dean C (1982) Puerperal psychosis. In: Brockington IF, Kumar R (eds) Motherhood and mental illness. Academic Press, London

Ciompi L, Müller C (1976) Lebensweg und Alter der Schizophrenen. Eine katamnestische Langzeitstudie bis ins Senium. Springer, Berlin Heidelberg New York

Dean C, Kendell RE (1981) The symptomatology of puerperal illness. Br J Psychiatry 139:128–133

Gershon ES, Bunney WE, Leckman JF, Van Eerdewegh M, De Bauche B (1976) The inheritance of affective disorders: a review of data and hypotheses. Behav Genet 6:227–261

Huber G, Gross G, Schuttler R (1979) Schizophrenie. Verlaufs- und sozialpsychiatrische Langzeituntersuchung an den 1945–1959 in Bonn hospitalisierten schizophrenen Kranken. Springer, Berlin Heidelberg New York

Kadrmas A, Winokur G, Crowe R (1979) Postpartum mania. Br J Psychiatry 135:551–554

Kendell RE, Rennie D, Clarke JA, Dean C (1981) The social and obstetric correlates of psychiatric admission in the puerperium. Psychol Med 11:341–350

Paffenbarger RS (1964) Epidemiological aspects of parapartum mental illness. Br J Prev Soc Med 18:189–195

Perris C (1966) A study of bipolar (manic-depressive) and unipolar recurrent depressive psychoses. Acta Psychiatr Scand [Suppl] 194

Pitt B (1968) "Atypical" depression following childbirth. Br J Psychiatry 114:1325–1335

Protheroe C (1969) Puerperal psychoses: a long term study 1927–1961. Br J Psychiatry 115:9–30

Pugh TF, Jerath BK, Schmidt WM, Reed RB (1963) Rates of mental disease related to childbearing. N Engl J Med 268:1224–1228

Reich T, Winokur G (1970) Postpartum psychoses in patients with manic depressive disease. J Nerv Ment Dis 151:60–68

Scharfetter C, Nüsperli M (1980) The group of schizophrenias, schizoaffective psychoses and affective disorders. Schizophr Bull 6: 586–591

Schöpf J, Bryois C, Jonquière M, Le PK (1984) On the nosology of severe psychiatric post-partum disorders. Results of a catamnestic investigation. Eur Arch Psychiatr Neurol Sci 234:54–63

Slater E (1938) Zur Erbpathologie des manisch-depressiven Irreseins. Die Eltern und Kinder von Manisch-Depressiven. Zbl Ges Neurol Psychiatr 163:1–47

Spitzer RL, Endicott J, Robins E (1978) Research diagnostic criteria: rationale and reliability. Arch Gen Psychiatry 35:773–782

Strömgren E (1935) Beiträge zur psychiatrischen Erblehre auf Grund von Untersuchungen an einer Inselbevölkerung. Acta Psychiatr Scand [Suppl] 19

Thuwe I (1974) Genetic factors in puerperal psychosis. Br J Psychiatry 125:378–385

Whalley LJ, Roberts DF, Wentzel J, Wright AF (1982) Genetic factors in puerperal affective psychoses. Acta Psychiatr Scand 65:180–193

Yarden PE, Max DM, Eisenbach Z (1966) The effect of childbirth on the prognosis of married schizophrenic women. Br J Psychiatry 112:491–499

Received July 3, 1985