A CONTROLLED STUDY OF POST-PARTUM MENTAL ILLNESS

By

C. P. SEAGER, M.B., B.Ch., D.P.M.
Assistant Psychiatrist
Barrow Hospital, Barrow Gurney, near Bristol

ALTHOUGH modern opinion recognizes that there is no such entity as puerperal insanity, views on the part played by the pregnancy in producing mental illness are not so unanimous. The fact that the onset of a patient's illness is related to the puerperium is considered by some authors to have a favourable, and others an unfavourable, prognostic significance. Puerperal mental illness achieves the distinction of separate identification in the International Nomenclature of Disease, not as "Schizophrenia in association with the puerperium" or "Manic depressive psychosis in association with the puerperium" but as Puerperal Psychosis, 688.1.

The relationship between mental illness and the puerperium may be one of three possibilities. Firstly, there may be no relationship at all, when one would expect the pattern of the illness and its outcome to be similar to that of a patient who had not been pregnant. Conversely the effects of the puerperium may be causal, when one would expect a unique pattern of illness, each case similar to the others and differing from other forms unrelated to pregnancy; such an illness would never occur for example in males, or after the reproductive period was passed.

The third possibility is that the puerperium acts as a stress situation which precipitates the illness in a predisposed personality. If it were correct that it is acting as a simple stress, then other stresses would be expected to produce a similar type of illness which would have the same natural history and response to treatment. The stress of the puerperium may however be unique, not reproducible by economic, domestic or social stresses, those that are more obviously seen affecting non-puerperal patients. It is well recognized for example that vigorous hormonal changes are taking place as pregnancy is replaced by lactation. In that case, although the general pattern of the various illnesses would be similar to that of non-puerperal mental illness, one would expect there to be differences both in symptomatology and outcome.

A study of the extensive literature on the subject of mental illness in association with pregnancy and the puerperium reveals a remarkable lack of consistent conclusions concerning aetiology; similarly there is no uniform opinion on prognosis. Yet it is of great importance to be able to offer to the patient and her husband information concerning the duration and outcome of her illness as well as the probability of recurrence in association with, or independent of, future pregnancies. For this reason I have studied a series of patients who have been in my care, some of them under the supervision of a senior colleague, during the past 5½ years. All of them were admitted with a mental illness starting from within a few days to two months after a confinement. Mental illness commencing during the gestational period has not been included.

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Tetlow (1955) has shown that the great majority of cases of mental illness associated with childbirth occur in the first month after confinement.

This group has been followed up and compared with a group of women, also in my care, who were in hospital at approximately the same time and matched for age and diagnosis with the puerperal group. There has also been opportunity to study a group of normal women in an obstetric unit who have recently been delivered.

Review of the Literature

Puerperal insanity has been described for many centuries. Zilboorg (1928) quotes a description by Hippocrates, and Boyd (1942) refers to Celsus, Galen and Soranus who recorded instances of post-partum psychoses. Boyd also points out that Marcé in 1858 concluded that there was no form of insanity which could not occur in relation to the puerperium. Yet the literature of the second half of the 19th century has many reports of insanity of pregnancy, the puerperium and lactation, this nomenclature being considered aetiologically descriptive.

Accepting that there is no specific entity of puerperal psychosis, the part played by the puerperium in the production of mental illness, if it plays any part at all, must be that of precipitating factor causing one of several types of illness with the same general pattern as those of non-puerperal patients. Why then do some patients develop the illness and others escape? Presumably because of predisposition on the part of the patient allowing the causative effects of the puerperium to act.

Considering these causative effects, the likely possibilities are physical and endocrine, and economic, social and individual psychological stresses. The physical causes are those which are likely to produce the toxic-confusional or delirious picture, and it is noticeable that with the extensive use of antibiotics this type of reaction is increasingly uncommon. Clarke (1913) considered toxic factors were not important, but Strecker and Ebaugh (1926) report 34 per cent. due to toxic factors, Solomons (1931) considered toxaemia, sepsis and chorea the most usual factors, and Parfitt (1934) found eight cases with subinvolution and four with pyrexia out of fourteen cases. James (1935) grouped psychoneurotic reactions with toxic deliria and these together formed a third of all cases. Harris (1936) reporting 45 cases admitted from 1931 to 1934 had eight patients with a delirious type of illness. Only one of these had an obvious toxic focus, a carbuncle. Piker (1938) reviewing the literature concerning cases associated with childbirth found 35 per cent. of psychoses of 891 cases due to toxic exhaustion. Cruikshank (1940) had an incidence of 38 per cent., Boyd (1942) 28·5 per cent. with some cases proceeding to more clear-cut manic-depressive or schizophrenic illness. Smalldon (1940) found only 3·6 per cent. of his cases were of toxic-exhaustive type, but adds that such factors were frequently noted as precipitants of depressive illness. Jacobs (1943) found 50 per cent. and Skottowe (1942) mentioned physical complications in more than half of his cases.

Then suddenly the pattern changes: Brew and Seidenberg (1950) describe 7 per cent., Hemphill (1952) in a review of the ten years 1938–48 found 20 per cent. but in a second series since 1948 found no cases. Tetlow (1955) found no difference in the incidence of obstetrical complications between a group of patients suffering from psychosis of childbearing and normal puerperals, the incidence of infection being 7·5 per cent., Vislie (1956) described 4·5 per cent.

of his cases with severe puerperal infection producing symptomatic psychosis and White *et al.* (1957) found no cases of toxic confusional psychosis. Madden *et al.* (1958) do not mention this diagnosis in their categories. Martin (1958) found 2·6 per cent. in her 75 cases. While some of the papers are describing gestational as well as puerperal mental illness, the incidence of delirious reactions is low in the former type of patient. It is apparent that there is a sharp fall in the incidence of this form of illness. The incidence of puerperal illness is always difficult to assess but Herzer (1906) gave 2·5 per 1,000, Hemphill (1952) 1·4 per 1,000, Tetlow (1955) 1·5 per 1,000 and it is possible that this fall is due to the reduction in the number of cases due to toxic conditions.

There still remain, however, many cases of puerperal mental illness and other factors must therefore be responsible. It has always been considered likely that considerable endocrine disturbance must take place at the puerperium; it has been suggested that this is in fact the cause of onset of labour, the diminishing sedative effect of the corpus luteum hormone leaving the unrestricted action of pituitary and follicular hormones on the gravid uterus (Strachan, 1947). However, Karnosh and Hope (1937) found that values of prolan and oestrin estimations did not differ appreciably from those from non-puerperal women. Hemphill (1952) mentions that the lack of response to E.C.T. and insulin points to a serious endocrine imbalance, since such treatments operate through their effect on endocrine equilibrium; other workers, however, do not agree that such a poor response to treatment is usual. Wilson and Christie (1925) used ovarian extract, the value of which was considered to be due to its effect of re-establishing menstruation. Davidson (1936) also treated patients with ovarian and thyroid hormones.

Bayliss (1955) describes the variations in plasma steroid level during pregnancy and the puerperium noting that the mean level returned to normal by the eighth post-partum day, but there was marked individual variation. He concludes that the main sources of the increase lie in the maternal adrenals and to a lesser extent in the placenta. Bower and Altschule (1956) treated relapsing cases of post-partum psychotic depression with progesterone because they considered the relapse to be due to hyperfunction of the adrenal cortex. Delay *et al.* (1948) considered the primary disorder to be found in the hypophysodiencephalic regions, producing both puerperal psychosis and histological changes in the endometrium. Laboucarié (1949) did not confirm this hypothesis.

General economic, social and religious factors have been considered of importance. Karnosh and Hope (1937) found an increased incidence of puerperal psychosis during the American depression but Brew and Seidenberg (1950) found a drop during the war years and Hemphill (1952) noticed no important influence on the number of admissions with puerperal illness during the same period, though no details are mentioned. Vislie (1956) on the other hand found an increase in Norway during the war years, particularly of the neurotic type of illness. Strecker and Ebaugh (1926) and Smalldon (1940) mention a high incidence among Jews, but this is not confirmed by Brew and Seidenberg (1950) nor Fondeur *et al.* (1957). If social pressures are important one would expect a high rate after illegitimate conceptions and births. Tetlow (1955) found a high proportion of single women (10 per cent.) in his series and a further five had children as a result of an extra-marital conception and three pregnancies were the result of an incestuous union, while only one normal control and one non-puerperal psychotic woman had an illegitimate pregnancy. However, he had the impression that this situation was not as disturbing to the patient as one might have expected. Kasanin (1940) reports a similar experience. One must

expect such factors to play an important part in the illness though they may be responsible for the form of the illness and the thought content rather than for production of the illness. Jacobs (1943) noted the importance of psychological conflict as a precipitating factor and suggested psychotherapy during pregnancy in appropriate cases. Skottowe (1942) commented on the frequency of mental strain present in 80 per cent. of his cases.

White *et al.* (1957) also emphasize the effect of such factors as unstable marriage relationships and financial strain as a result of the pregnancy, in the production of the illness. Fear of pregnancy, erroneous ideas due to inadequate knowledge, "old wives' tales", memories of previous illness, can also play their part in affecting even a normal pregnancy (Tylden, 1950).

The predisposition of the patient has also to be considered and two factors are of importance, heredity and the premorbid personality of the woman.

The assessment of hereditary factors is not usually easy since patients may not know or be unwilling to divulge information and even where facts are known, only criteria such as admission to hospital or suicide are likely to approach reliability and even these factors must depend on the prevailing culture pattern. This uncertainty is reflected in the wide range of incidence of hereditary factors found by different workers; Cruikshank (1940) found 32 per cent., Skottowe (1942) 50 per cent., Hemphill (1952) 14·5 per cent., Vislie (1956) 75 per cent., Tetlow (1955) 25 per cent.—this being significantly greater than in his group of non-puerperal women with psychosis, and Martin (1958) 32 per cent.

Several workers have commented on the premorbid personality of the patient who develops post-partum mental illness. Opinions are conflicting, since some workers believe that previous personality is significant while others take the opposite view. Zilboorg (1928) suggests that schizophrenia develops only in a sexually frigid, aloof schizoid personality. Cruikshank (1940) found a high incidence of pre-psychotic instability and Boyd (1942) mentions immaturity, and anxiety concerning the event. Hemphill (1952) describes a dependent, over-anxious, obsessional, rigid personality which results in an entity, puerperal depression which differs in outcome from non-puerperal depression. Tetlow (1955) found evidence of a personality predisposition with sexual and reproductive inadequacy though evidence for this is not fully presented.

White *et al.* (1957) found evidence of long standing maladjustment and immaturity, although in another paper by the same workers (Fondeur *et al.*, 1957) the comment is made that there is no unusual premorbid personality.

Anderson (1933) in a controlled study found no material difference in the pre-psychotic sexual life of groups of puerperal and non-puerperal psychotic women. Martin (1958) could draw no definite conclusions from her series but found that fourteen of her fifteen schizophrenic patients showed no clear pre-psychotic schizoid features.

The form of the illness and its outcome have also received much attention and again there is conflicting evidence. Comment has already been made on the fall in incidence of delirious reactions, and in more recent papers the main groups described are manic-depressive psychosis, schizophrenia and neurotic reactions. While the incidence of delirious reactions has fallen, mention of neurotic illness has become rather more common. Strecker and Ebaugh (1926) found 2 per cent. in their series, Parfitt (1934) no cases, Boyd (1942) 6 per cent. and Hemphill (1952) 6 per cent. (this is a series spread over 14 years). The fact that there is an increase in the number of patients on whom this diagnosis is made does not necessarily indicate an increase in incidence of neurotic reactions. It is likely that

with a greater awareness of the possibility of neurotic illness and an increase in the number of non-statutory beds, more patients are coming to the attention of the psychiatrist.

While the usual reference to the form of the illness is that it follows, in general terms the pattern of the non-puerperal illness, Armstrong-Jones (1923), McIlroy (1928), and Smalldon (1940), mention the high incidence of infanticidal impulses and Frumkes (1934) found a frequent delusion that the child was dead. Brew and Seidenberg (1950) describe actual or symbolic rejection of the child as a universal finding. Tetlow (1955) also found evidence of an abnormal emotional relationship with the child in cases of affective psychosis but less marked in schizophrenia.

Hemphill (1952) has described puerperal depression differing from manic-depressive psychosis and in many ways resembling involutional melancholia. The personality is rigid and restrictive, the illness presents with agitation, depression, ideas of guilt and unworthiness and the condition is extremely intractable though eventual recovery is usual. Hegarty (1955) describes post-puerperal recurrent depression, a relapsing depression related to the pre-menstrual period and consequent on mild puerperal depression.

Hemphill (1952) also comments on the poor prognosis for schizophrenia as do Skottowe (1942), James (1935), and Boyd (1942). Brew and Seidenberg (1950) find the prognosis poorer than in affective states, while Armstrong-Jones (1923), Parfitt (1943), Harris (1936), Smalldon (1940) and Wick (1941) described a good eventual prognosis prior to the advent of modern physical treatments. More recently Polonio and Figueiredo (1955), Vislie (1956), Fondeur *et al.* (1957), and Martin (1958) also found the outcome in schizophrenia satisfactory.

The prognosis of puerperal mental illness can only be satisfactorily examined in relationship to that of a similar group of women suffering from non-puerperal mental illness of the same type. Controlled studies are essential if one is to assess the effect of the puerperal aspect of the illness. The number of studies with a comparable group of non-puerperal women with mental illness is small, and those that are found do not always have a follow-up of the patients. Tetlow (1955) compares a group of puerperal and non-puerperal women both suffering from mental illness and also describes puerperal patients without mental illness. He describes general aetiological factors but does not give clinical details of the psychiatric illness. There is no follow-up. Polonio and Figueiredo (1955) review the clinical records of a group of puerperal mental patients and compare them with a non-puerperal group. White *et al.* (1957) compare 100 cases of post-partum mental illness with a similar group matched for age and year of admission and also describe follow-up studies. Seventy-five per cent. were reasonably well after four years, while one in seven may be expected to have a further illness in association with a subsequent pregnancy.

Consideration of the extensive literature on the subject shows a number of faults. It is common for cases of mental illness occurring during pregnancy and after to be grouped together, yet it seems likely, both from a psychological point of view, and also that of hormone balance that these periods may be dissimilar. Even more apparent is the lack of control studies, and yet conclusions are drawn concerning prognosis without reference to patients who have not been pregnant. The retrospective study of case notes suffers from the disadvantage that data are not always accurately recorded, while patients looked after by different physicians cannot necessarily be expected to achieve the same response to treatment. Follow-up studies are also necessary before the question of whether further pregnancy is advisable can be satisfactorily answered.

The present paper describes an attempt to remedy some of the defects which have been mentioned.

METHOD

When carrying out a scientific study it is important to maintain constant all variables except the one under observation. In clinical research this is manifestly impossible, since many factors are outside the control of the investigator. One method of circumventing this problem is the use of large series in the hope that minor variations will cancel each other out. An alternative is a detailed study of a small group with efforts made to study the factors responsible in order to minimize or remove their effect on the investigation. This includes both medical and environmental factors, since in addition to the purely physical methods of treatment given to the patient many factors, broadly grouped together as the therapeutic environment, play their part in the eventual outcome of a patient's illness. Even the effect of drugs may vary, depending on both internal and external environmental factors (Marley, 1959). The type of ward and hospital, the attitude of staff and patients, the relatives and neighbours, all produce their own effect contributing to or diminishing the therapeutic effort.

In an attempt to reduce at least some of the variables in this study, I have limited investigation to patients with post-partum mental illness treated by myself, though at times under the supervision of a senior colleague and have paired with them non-puerperal patients who were in hospital during approximately the same period. In this way my own knowledge and experience has been constant for each pair and so, to some extent, has the ward environment. Patients were paired for age and also for diagnosis utilizing the final diagnosis arrived at on discharge from hospital. There was no attempt at pairing details of clinical state or background.

The cases were two series, each of 42 patients, admitted to hospital during the period July, 1953 to March, 1959. One group were suffering from a mental illness occurring in close relationship to the puerperium—i.e. within two months of the date of delivery. Patients whose florid illness commenced during pregnancy were not included, though some patients, on questioning, described retrospectively minor prodromal symptoms. The second group were diagnosed as having similar mental illnesses but not related to the puerperium.

I also had the opportunity of examining a group of 42 patients in the Department of Obstetrics. These patients, unselected, had been recently delivered, and were not considered to be suffering from overt mental illness.

The diagnosis of patients with mental illness was made on the clinical history and psychiatric state together with additional information from relatives.

It is self-evident that the diagnosis of endogenous depression could not be restricted to cases without evidence of reactive factors, since in all cases there was the puerperium which could be considered a reactive factor. Diagnosis was based on the following criteria, several of these features being present to substantiate a given diagnosis:

1. *Endogenous depression.* Deep depressive affect with delusions of guilt, unworthiness or hopelessness. Suicidal thoughts or attempt. Restlessness and agitation or retardation. Slowing of thought processes. Early waking type of insomnia. Lack of insight.

2. *Neurotic depression.* Labile depression, clearing temporarily when in cheerful surroundings or company. Anxiety symptoms both somatic and mental. Phobias. Lack of delusional ideas. Difficulty in getting to sleep, unpleasant dreams.

3. *Anxiety state.* Somatic symptoms—palpitation, headaches, dyspepsia. Phobias, panic states. Affect predominantly of fear.

4. *Schizophrenia.* Bizarre manneristic behaviour. Bewilderment and perplexity. Involved or circumstantial speech. Blocking of speech. Incongruous or blunted affect. Bizarre hypochondriacal or paranoid delusions, auditory hallucinations. Lack of insight. Clear sensorium.

Manic states were not found nor were toxic-confusional states. However, the diagnosis between toxic-confusional states and schizophrenia or endogenous depression was not always easy; in the early stage retardation or perplexity may give the appearance of confusion and disorientation. Further observation clarified the picture.

Although some authorities, Feldman *et al.* (1946) and Impastato and Gabriel (1957) suggest there is a danger of embolism if electroplexy is given too soon after delivery, this was not considered to be a contra-indication to treatment where it was indicated and each patient received electroplexy, insulin coma, tranquillizing drugs or psychotherapy separately or together, according to psychiatric indications based on the diagnosis.

All but three recent admissions in each of the groups with mental illness were discharged from hospital after the illness under observation, though some of each group have subsequently been re-admitted. Both groups of patients have recently been visited by a social worker to assess their present status. The follow-up period varies from six months to five years since discharge from hospital. The social worker noted the present behaviour of the patient, together with confirmatory evidence from a relative where possible, the attitude of the patient to the child born prior to the illness and whether there had been further pregnancy or further mental illness, and any temporal association between them.

The non-psychiatric patients in the obstetric wards have not been followed up, but since there is only one mental hospital serving the area, it is unlikely that a patient would be admitted elsewhere, and none of these patients had been admitted up to a month after confinement.

The three groups of patients were studied from the following points of view where applicable:

1. Previous history, family history and premorbid personality.
2. Obstetric history, particularly in relationship to the immediate pregnancy.
3. Other stresses occurring immediately prior to the onset of the illness.
4. Symptomatology and response to treatment.
5. Follow-up results of the patients with mental illness. Attitude of patient towards further pregnancy, towards the husband, and the child which was born at the time of the mental illness.

Results

Each group consists of 42 female patients and will be referred to as the puerperal mental illness group, the non-puerperal mental illness group and the normal puerperal group respectively and results will be given in this order.

The age range is 19 to 42 years, average 30·0 years in the puerperal mental illness group, 19 to 42 years, average 30·0 years in the non-puerperal mental illness group and 21 to 43 years, average 31·6 years in the normal puerperal group.

The number of patients who had undergone one or more pregnancies are shown in Table I.

TABLE I

Number of Pregnancies Undergone by Patients in Each Group

	Nil	Primi-para	Multiparous			
			2	3	4	5 or More
Puerperal mental illness ..	—	16	11	10	3	2
Non-puerperal mental illness ..	21	10	6	4	1	0
Normal puerperal	—	12	12	7	1	10

A chi-squared test shows there is no significant difference between the numbers of primiparous and multiparous patients in the two puerperal groups ($\chi^2=1\cdot07$; $p>0\cdot1$). Because several of the non-puerperal group were unmarried and others childless, the relationship of numbers of children cannot usefully be compared with the other two groups.

Other personal data which were considered relevant were the numbers of patients who had had previous mental illness, this being recognized by admission to a mental hospital, and a family history of mental illness, using a similar criterion.

TABLE II

Incidence of Previous Mental Illness in Patient, Parents and Siblings

	Previous Psychiatric Illness		Family History of Psychiatric Illness		
	With Pregnancy	Without Pregnancy	Paternal	Maternal	Sibling
Puerperal mental illness ..	6	6	2	9*	0
Non-puerperal mental illness ..	3	3	4	8†	1
Normal puerperal	1	2	1	6	0

* Two patients' mothers had puerperal psychosis, one after the patient's birth.
† One patient's mother had puerperal psychosis.

In assessing premorbid personality, five categories were used, relying on the patient's own description and supplemented in the case of the mentally ill patients by information from relatives. The groups were:

(*a*) Schizoid—shy, reserved, isolated with few outside interests.

(*b*) Anxiety-prone—a worrier, with minor preoccupations, afraid of meeting people.

(*c*) Obsessional—meticulous, houseproud, conscientious.

(*d*) Extraverted—good company, mood swings, many friends, outside interests.

(*e*) Other—usually placid, with no marked tendencies in the direction of one of the other four types.

The incidence of the different types of personality is shown in Table III.

TABLE III

Premorbid Personality of Three Groups of Patients

	Schizoid	Anxiety Prone	Obsessional	Extroverted	Other
Puerperal mental illness	7	25	1	2	7
Non-puerperal mental illness ..	12	19	4	2	5
Normal puerperal	0	17	0	2	23

A chi-squared examination was carried out to examine the relationship between the premorbid personalities considered predisposing to mental illness, that is—schizoid, anxiety prone, obsessional and extraverted, in those suffering from mental illness as compared with the normal puerperal group. Summing the number of patients with predisposing personalities with mental illness and comparing them with the normal puerperal patients, there is a highly significant difference between the two groups ($\chi^2=22\cdot9$; $p<0\cdot001$). It is unnecessary to carry out statistical examination of the results of the two mentally ill groups, since inspection of the table shows that with thirty-five of the puerperal mentally ill and thirty-seven of the non-puerperal mentally ill having a personality predisposing to mental illness and seven of the former and five of the latter having a placid personality, there is manifestly no difference between these two groups.

The next point to be considered is the situation before and during the pregnancy to assess the effect of such factors as personal stresses and obstetrical complications. In the non-puerperal group the incidence of personal stresses was also noted. The type of stresses found were domestic, where the bread-winner was ill or deceased, marital strife or personal illness such as influenza. The incidence of premarital conception, illegitimate births (nil found) was noted and the mother was questioned concerning her attitude towards the pregnancy as to whether there was positive desire for a child, accidental but not unwanted conception, or a definite annoyance or anger at the prospect of a child. Obstetrical complications such as breech presentation, Caesarean section, or Rh. factor incompatibility were noted.

TABLE IV

Incidence of Reactive Factors

	Personal Reactive Factors	Premarital Conception	Unwanted Pregnancy	Obstetrical Complications
Puerperal mental illness	7	2	5	13
Non-puerperal mental illness ..	16	Not applicable		
Normal puerperal	7	0	4	24

The diagnostic categories of the two groups of patients with mental illness have already been defined. In none of the patients seen in the Obstetrical Wards was there evidence of severe mental illness although some patients showed definite anxiety symptoms. None of these patients has since been admitted to the mental hospital, though the patients have not been followed up at home.

The number of patients in each diagnostic category is summarized in Table V; since the groups were paired for diagnosis the numbers are the same.

TABLE V

Number of Patients in Each Diagnostic Group

Schizophrenia	15
Endogenous depression	10
Neurotic depression	12
Anxiety state	5

The time relationship between the date of parturition and the onset of symptoms was noted and also the delay between onset of symptoms and admission to hospital. Similarly the duration of symptoms prior to admission to hospital in the non-puerperal group was noted. The results are summarized in Tables VI and VII.

TABLE VI

Onset of Symptoms After Parturition

	Schizophrenia	Endogenous Depression	Neurotic Depression	Anxiety State
First week	5	4	5	1
Second week	2	2	3	2
Fourth week	2	0	2	0
More than six weeks	5	3	1	2
Not known	1	1	1	0

TABLE VII

Time of Admission to Hospital After Onset of Symptoms

	Schizophrenia		Endogenous Depression		Neurotic Depression		Anxiety State	
	Puerperal	Non-Puerperal	Puerperal	Non-Puerperal	Puerperal	Non-Puerperal	Puerperal	Non-Puerperal
Less than 1 month	5	3	3	0	4	0	1	0
1–2 months	6	4	2	0	0	2	2	2
2–6 months	4	6	4	2	4	3	1	1
More than 6 months	0	2	1	8	4	7	1	2

The majority of patients develop symptoms within one month of confinement, but Table VII shows that this does not mean they are necessarily admitted to hospital at that time. However, the patients with puerperal illness tend to seek admission, or possibly to be admitted, earlier, presumably because the inability to manage the extra work involved with a new baby draws attention to the mental illness. Comparing the patients admitted within eight weeks of onset of symptoms with those admitted after symptoms have been present for eight weeks, there is a significant difference between the puerperal and the non-puerperal group ($\chi^2=7{\cdot}1$; $p<0{\cdot}01$).

After treatment, the patient was able to be discharged in the majority of cases, with only three recent admissions still in hospital. Some patients took their own discharge. As will be demonstrated in the follow-up study, a number of patients were re-admitted. The condition of the patient at the time of discharge was classified as "Recovered" if she was symptom-free and able to return to her normal work. If there were marked symptoms which prevented full return to activity she was classified "Relieved" and "Not Improved" where there was persistence of the original symptoms to a severe degree.

Table VIII gives the number of patients in each group.

TABLE VIII

State of Patients on Discharge

	Recovered	Relieved	Not Improved	In Hospital
Schizophrenia—15 Pairs				
Puerperal mental illness	6	4	2	3
Non-puerperal mental illness ..	9	6	0	0
Endogenous Depression—10 Pairs				
Puerperal mental illness	5	5	0	0
Non-puerperal mental illness ..	7	3	0	0
Neurotic Depression—12 Pairs				
Puerperal mental illness	6	4	2	0
Non-puerperal mental illness ..	4	8	0	0
Anxiety State—5 Pairs				
Puerperal mental illness	4	1	0	0
Non-puerperal mental illness ..	4	1	0	0

No attempt is made to describe individual treatment but in general patients with psychotic illness received physical treatments—electroplexy, insulin coma and tranquillizing drugs—while those with neurotic illness were treated psychotherapeutically and with sedation and modified insulin.

One of the features which has been stressed by previous workers is the occurrence of marked feelings of rejection of the child. This may occur as overt feelings of hatred or disgust, or as a phobia of harming the child. Guilt feelings on this account are thought to be responsible for a high number of suicidal attempts. In this series there was one case of infanticide. One patient complained of having lost her love for the baby and two complained of feelings of wishing to harm the child. Thirteen patients attempted suicide, all but two of these suffering from either endogenous or neurotic depression. In the non-puerperal series there were only two cases of attempted suicide.

At the follow-up interview the patient was asked about her attitude towards the child at that time. Six patients stated that they still blamed the child for the illness and resented its presence. None of the patients blamed the husband for the illness, nor was any antagonism expressed towards him, at least in reference to the pregnancy or the subsequent mental illness.

A follow-up study was carried out on both groups of patients and all but three were traced; of those untraced, one, a schizophrenic, was known to have returned to Ireland and been admitted to a mental hospital there, while no information was available regarding the remaining two, who had left the district. All three patients were in the puerperal mental illness group.

The period of follow-up varied from six months to over five years. Those patients who had not been out of hospital for at least six months are not included in this part of the survey, so that information is available concerning thirty-seven patients in the puerperal group and thirty-nine of the non-puerperal group. The results are shown in Table IX.

As a measure of the severity of the illness in each patient, note has been made of the total number of days spent in hospital, and this is expressed as a percentage of the total period which has elapsed since the date of admission. This gives more information than the duration of the original stay in hospital

TABLE IX

Follow-up Study

	Up to 1 year		Up to 2 years		Up to 3 years		Up to 5 years	
	Puer-peral	Non-peur-peral	Peur-peral	Non-peur-peral	Peur-peral	Non-peur-peral	Peur-peral	Non-peur-peral
Schizophrenia:								
Symptom free ..	5	4	1	1	–	3	1	–
Minor symptoms	–	2	1	2	–	–	–	–
Relapse	–	–	1	–	–	–	–	–
Readmission ..	–	–	–	–	1	–	1	1
Endogenous depression								
Symptom free ..	–	–	–	3	1	–	2	1
Minor symptoms	1	1	–	1	–	–	1	3
Relapse	1	–	1	–	–	1	1	–
Readmission ..	–	–	1	–	–	–	1	–
Neurotic depression:								
Symptom free ..	2	2	2	2	–	–	–	1
Minor symptoms	1	2	2	1	–	–	1	1
Relapse	–	1	–	1	–	–	–	-
Readmission ..	2	–	–	–	–	–	1	–
Anxiety state:								
Symptom free ..	2	–	1	–	–	–	–	–
Minor symptoms	1	3	–	–	–	1	1	–
Relapse	–	–	–	1	–	–	–	–
Readmission ..	–	–	–	–	–	–	–	–

since it provides an indication of the total incapacity. It does not, however, take into account the occurrence of symptoms which do not require hospital treatment.

The mean percentage time in hospital of the four diagnostic categories in each group of patients is shown in Table X.

TABLE X

Mean Percentage Time in Hospital

	Puerperal Mental Illness Per cent.	Non-Puerperal Mental Illness Per cent.	t-test	
Schizophrenia	20·9	30·6	1·2	NS
Endogenous depression ..	7·2	7·3	Not carried out	
Neurotic depression	16·4	7·7	1·0	NS
Anxiety state	7·4	10·3	1·6	NS

t-tests show that there is no significant difference between each pair of means; that is, the morbidity rate as measured by percentage time spent in hospital does not differ in the two groups of patients in each diagnostic category.

Table IX shows the number of patient who were re-admitted and also those who had relapsed but were not sufficiently ill to return to hospital. It therefore provides a different measure of the degree of morbidity found in the two groups of patients. Dividing the clinical state at follow-up into two groups instead of four, these being "Symptom-free" and "Minor symptoms only" in one, and "Relapse" and "Re-admission" in the other, a chi-squared test shows there is no significant difference between the two groups of patients ($\chi^2=2\cdot3$; $p>0\cdot1$).

There are insufficient numbers to obtain satisfactory information about the individual diagnostic groups.

An important question in reference to prognosis is the likelihood of further illness in association with further pregnancy. Details are shown in Table XI.

TABLE XI

Relationship Between Further Pregnancy and Breakdown in Puerperal Mentally Ill Group

	Further Pregnancy		
	With Mental Illness	Without Mental Illness	Further Mental Illness Without Pregnancy
Schizophrenia	0	2	2
Endogenous depression ..	2	3	0
Neurotic depression	1	0	0
Anxiety state	0	0	0

Of the normal puerperal women, two had had a mental illness in association with a previous puerperium and now showed no sign of recurrence, while two had a history of depressive illness unrelated to pregnancy, one treated by electroplexy; neither of these now showed sign of mental illness.

In the non-puerperal group, one schizophrenic, one endogenous depressive and two neurotic depressive patients had a history of a previous breakdown in association with the puerperium.

DISCUSSION

Two aspects of this study require examination.

The first of these is a consideration of any differences between normal puerperal women and those who develop mental illness. Information is available concerning the incidence of previous psychiatric illness, morbid family history, predisposing personality traits and such stresses as marital difficulties, obstetric complications, unwanted pregnancies and premarital conception. As may be expected, there was a higher incidence of previous psychiatric illness, morbid family history and predisposing personality traits in those patients who developed mental illness. When one considers the number of patients in whom there were considered to be stressful circumstances, whether marital, domestic, social or obstetric, the numbers in the two groups are remarkably equal. Perhaps because the normal patients were seen in a teaching hospital obstetric unit, there is a higher incidence of obstetric complications in this group than in the mentally ill group. The number of children, and the number of previous pregnancies also showed no relationship to the incidence of puerperal mental illness. One must conclude from these findings that the development of puerperal mental illness depends more on hereditary and personality factors than on the immediate stressful events in the patient's life.

The second aspect requiring consideration is the relationship between the patients in whom the mental illness was preceded by parturition and those in whom this was not so. The two groups show many similarities. In both there is a high incidence of previous mental illness, 28·6 per cent. in the puerperal and 14·3 per cent. in the non-puerperal group. Both have a high incidence of morbid family history, 26·2 per cent. and 31·0 per cent. respectively. The immediate prognosis as indicated by the condition on discharge, and the later prognosis shown by follow-up studies also reveal no marked differences.

The main difference between the two groups is shown in the period which elapsed between onset of symptoms and admission to hospital. In the puerperal group 28 patients developed symptoms before the end of the fourth week after parturition and of these, thirteen were admitted to hospital in that period. The majority, 36, of the puerperal patients were in hospital within six months of the onset of symptoms but only 23 of the non-puerperal patients were admitted within six months of the development of symptoms. Since it is generally considered that early treatment, particularly of schizophrenia, is of importance in achieving a satisfactory therapeutic response, the earlier admission should be a favourable feature.

No details are given of individual cases, but there was no evidence of any special features in the clinical state of the puerperal patients to distinguish them from the non-puerperal group except the attitude of the mother towards the child. This may be considered a significant feature distinguishing the condition from non-puerperal illness, but it seems much more reasonable to consider that concern with the recent event of childbirth is a likely pre-occupation of the mother. If therefore, she develops a depressive illness for example, it would be expected that, as in non-puerperal illness, the thought content would be depressive and the pre-occupation would be about the harm she believes she has done, or the fear of doing harm. Phobias of harming children have been seen independent of puerperal illness, though often in association with guilt concerning the child, as for example an illegitimate birth, or even past indiscretions unassociated with the particular child in any way. There is therefore no indication that puerperal illness is in any way a unique illness, but the symptoms and prognosis are in general similar to other types of mental illness. It is schizophrenia which some authors believe has a hopeless prognosis. In this series, of the fifteen cases of post-partum schizophrenia, two were discharged unchanged and three were still in hospital at the time of examination. There were no schizophrenics in the non-puerperal group undischarged and all were considered to have improved. In the follow-up study no information was available on two of the puerperal patients but even if they are assumed to have been re-admitted to other hospitals, five patients had further illness as compared with one non-puerperal schizophrenic. Added to this is the fact that two puerperal schizophrenic patients had had a further child without illness. Therefore one must consider the prognosis to be somewhat guarded in puerperal schizophrenia but not to have the entirely unfavourable outlook suggested by some authors.

Two features which are important for the family as a whole after the distressing occurrence of puerperal illness, are the effect it may have on the mother's attitude to the child and to her husband, and secondly, the likelihood of developing a further illness in association with a subsequent pregnancy. Several patients described marked feelings of rejection of the child while others experienced phobias of harming the child or husband. These latter symptoms have been interpreted as manifestations of similar unconscious feelings of rejection. Tetlow (1955) reports that all his cases of affective psychosis showed this symptom, which may persist for many years. He also stated that in non-puerperal women who described such a symptom, he found evidence of a mild, unnoticed depression that had occurred in association with the birth of the child.

The patient who killed her children, twins, is a paranoid schizophrenic, still in hospital, and maintains that she is fond of her remaining children and expresses regret at the death of the twins. The patients who described overt

feelings of rejection or loss of love for the child had regained their affection at the time of follow-up. Six other patients who had expressed no such symptoms in hospital blamed the child for the illness when seen at follow-up and were still antagonistic towards it.

There was a high incidence of attempted suicide in the puerperal group of patients, and this again has been interpreted as representing an indirect wish to harm the child by withdrawing the source of food. It is more usually considered a result of guilt feelings associated with a depressive thought content. There was no further incidence of suicidal attempt in these patients after recovery from the illness.

Taking these features together, the occurrence of puerperal mental illness leads to great distress in the family and can result in later difficulties for the child as a result of the rejection by the mother, as well as the disturbance which occurs at the time of the illness.

For this reason it is important to be able to assess the likelihood of a further mental illness in association with subsequent pregnancies. Eight pregnancies had occurred by the time the follow-up study was carried out, and three of these patients developed a further mental illness, two having an endogenous depression and one a neurotic depression. The latter patient has a persistent depersonalization syndrome but the two endogenous depressions again responded to electroplexy. Two patients who had suffered from schizophrenic illnesses and three who had endogenous depression became pregnant and were delivered without incident. From these few cases no conclusion can be drawn. It is usually advised that a patient should wait at least two years before considering a further pregnancy, since there is always a possibility of further illness independent of any pregnancy. Two schizophrenic patients developed further illness in this way.

If a patient does become pregnant one has to consider whether to allow the pregnancy to continue or to recommend termination. Each case must be judged individually, with personal history of the patient and type of illness being taken into consideration. One must also bear in mind the findings of Ekblad (1955) that 25 per cent. of his patients developed guilt reactions following abortions induced on psychiatric indications. Arkle (1957) concluded that termination of pregnancy on account of the mental state of the patient is rarely justified by British law since the mental and physical state of the mother is not affected by continuation of the pregnancy. He recognized, however, that social, humanitarian and eugenic aspects are neglected by the law as it now stands.

Summarizing the information presented, the patients who develop puerperal illness differ from normal puerperal women in their hereditary and personality make-up, and are in most respects identical with a group of patients with mental illness not associated with the puerperium. This suggests that the puerperium acts as a precipitating event in a predisposed person. There is no indication as to the way in which the pregnancy or puerperium acts as a stress. No consistent pattern was observed in the genetic or personality structure, nor was there any consistent feature in the pregnancy concerned. However, this is not surprising since we have no real knowledge as to the precise aetiology of many psychiatric illnesses.

Since puerperal mental illness is essentially similar to non-puerperal illness, assessment of prognosis will depend on similar features. Thus a good prognosis in a schizophrenic illness would be associated with acute onset, sound previous personality, and lack of family history and pyknic body build. The acute onset and early treatment are particularly likely to be features of schizophrenia

occurring in the puerperium and one would therefore expect a reasonably good prognosis. It is probably for this reason, the fact that in spite of presence of the usually accepted satisfactory prognostic features, puerperal schizophrenia does not always respond to treatment, that the gloomy prognosis is offered.

If one accepts the suggestion that pregnancy or the puerperium acts as a precipitating stress, one would expect that if an illness occurs after one confinement, it may well do so on a subsequent occasion. Similarly, however, if the illness responded to treatment previously, it is likely to respond a second time. In one's advice concerning further pregnancy, one must bear in mind the possible effects on the whole family of a fairly prolonged period of mental illness, balanced against the probability of eventual recovery.

No information is available as to the way in which the puerperium acts as a stressor, whether it is psychological or physical, or a mixture of these. Such knowledge would be of prophylactic value. It is unlikely that psychotherapy can prevent a psychotic episode but this may be of value in eliminating some of the anxiety states consequent upon parturition. Jacobs (1943) and Boyd (1942) both stress the need for careful psychological management and as Martin (1958) points out, it would seem wise to enquire in early pregnancy about marital stresses and home difficulties which may be alterable.

If a patient is considered to be likely to develop a mental illness after parturition, observation during the puerperium may enable early treatment to be instituted to prevent such distressing complications as suicidal attempts. Further investigation, with a controlled study, is necessary to establish whether investigation during the pregnancy would be of value in identifying patients likely to develop mental illness, and whether support during the pregnancy and puerperium would actually reduce the incidence of mental illness.

In conclusion one can only quote the words of Professor Anderson (1950): "The interest invariably aroused by this topic showed that psychiatrists had not rid themselves of the feeling, illusory though it might be, that the mental illness of the puerperium had unusual features."

Summary

Forty-two patients with puerperal mental illness were compared with a similar number of non-puerperal patients with mental illness, matched for age and illness, and normal puerperal women.

The mentally ill puerperal women differed from the normal puerperals in respect of history of previous illness in themselves and their relatives.

The mentally ill puerperal women did not differ significantly from the mentally ill non-puerperal women.

It was concluded that the puerperium acts as a stress precipitating mental illness in the predisposed woman.

Observation during pregnancy and the puerperium may be of value in reducing the incidence of suicidal attempts and possibly of the mental illness.

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