iii. Genetical Aspects

By

ELIOT SLATER and ERIC GLITHERO

When we face the crucial problem of the aetiological basis of the psychoses we have described, there are three main possibilities to be considered. Either they are to be regarded as symptomatic schizophrenias of purely epileptic causation; or they are independent schizophrenias which have appeared in these epileptic subjects coincidentally as the result of pure chance; or they are forms of schizophrenic illness which have arisen in individuals predisposed thereto by the stresses produced by the epilepsy. An investigation of the genetical background is capable of producing evidence which would assist in answering this question. If the first hypothesis is correct, the incidence of schizophrenic psychoses in the relatives of our subjects should be no greater than in the general population. If the second hypothesis is correct, the incidence of schizophrenic psychoses in the relatives should be the same as in the relatives of schizophrenics of the usual kind. If the third hypothesis is correct, we would expect an incidence of schizophrenia in the relatives of our patients which would lie somewhere between these two figures.

With this in mind, an investigation of the family history was undertaken along two lines. First, all the hospital records were examined for information about illness or abnormality among first degree relatives. Secondly, one of us (E.G.) contacted the accessible relatives and interviewed them, either at hospital or in their own homes. At these interviews questions were put, not only about the family history, but also about the patient's follow-up history since last admission to hospital, a subject which will be dealt with later. On the family history, relatives were asked for complete data about the patient's parents and sibs, and his children if any, including age now or at death or when last heard of, illnesses, especially epilepsy or any mental illness, and temperament and personality. Where there was a record of mental illness, data were obtained on the time and the hospital where it had been treated, so that further enquiries could be made.

In this way data about the family were taken from the hospital notes in all 69 cases, from 22 patients in cases where they were capable of giving useful information, from 7 fathers, 23 mothers, 6 brothers, 15 sisters, 4 husbands, 10 wives, one aunt, one sister-in-law, and one family doctor. The distribution of these sources of information is shown in Table 1.

TABLE I

Source of information	Number of cases
Hospital notes only	6
Hospital notes and patient	2
Hospital notes, patient and relative	19
Hospital notes and one relative	35
Hospital notes and two relatives	6
Hospital notes, patient and family doctor	1
Total	69

Sources of information contacted for information on family history.

The psychiatric abnormalities discovered in this way are shown in Table II.

TABLE II

Abnormality	Fathers	Mothers	Brothers	Sisters	Total
Epileptic paranoid psychosis	1	—	—	—	1
Epilepsy, non-psychotic	1	1	3	2	7
Schizophrenia	—	1	1	—	2
Puerperal confusional psychosis	—	1	—	—	1
Senile psychosis	—	1	—	—	1
Possible puerperal psychosis	—	1	—	—	1
"Psychopathic personality"	9	2	—	1	12
Alcoholism	4	1	1	—	6
Neurotic symptoms	1	3	4	2	10
Total of anomalous persons	16	11	9	5	41

Psychiatric abnormalities observed among parents and sibs. Categories are mutually exclusive.

https://doi.org/10.1192/bjp.109.458.130 Published online by Cambridge University Press

The most interesting finding was that the father of one of our patients (*45*) had himself had an epileptic paranoid psychosis of a type which might quite well be regarded as schizophrenia-like.

This man was said to have had "sunstroke" at the age of three or four, having suddenly fallen while playing with his sister and become unconscious. There is a history of fits and fits of laughing in childhood. He was always self-willed and obstinate, difficult to live with. He seems to have been free from fits during adolescence, and he became a skilled woodworker. The first fit in adult life was observed by his wife at night, about nine months after marriage, when he was 27. Major attacks were rare, but he would also have a "kind of fit" in which he would become vacant and confused for a few minutes, suck his lips constantly and noisily, and tremble. He would have numbers of these attacks at night, and sometimes during the day. In personality he was an extreme individualist, a conscientious objector, an atheist, anarchist, socialist, ardent trade unionist, public orator, and a great reader of psychology, philosophy, political theory, etc. Opinionated and bombastic, he would make a great fuss about small issues, and was excitable, irritable, fussy and meticulous. All through his life he was extremely bitter in his opposition to authority. His habits were abstemious.

At the age of 40 he is said to have had a nervous breakdown, but he was not in hospital. From this time on he became liable to long moods of depression. At the age of 43 (in 1935) he was found to be suffering from pernicious anaemia, for which he received regular hospital out-patient treatment. The psychotic illness came on acutely at the age of 46, at a time when according to his wife he had had very great numbers of his minor attacks at night, and one night when they went on nearly all night. One day his brother was called to him in the street, where he found him kneeling in prayer with a crowd round him, sympathetic but astonished and inquisitive. He declared that some spiritual force had taken possession of his body, and a voice had said "Fear not, I am with you, go and see Herr Hitler". He thought he had a mission to lead all mankind to salvation. He believed that the end of the world had come, and that all men were not brothers. He began to shout in the street "The Jews, the Jews", and was taken to hospital.

In hospital he was found to be physically well, haemoglobin 78 per cent., red cells 3·8 million, colour index 1·04; no neurological lesion detected. He remembered the circumstances of his admission, and does not appear to have been confused. He is described as pedantic and stilted. He settled down very well in hospital, and for the first few months showed no inclination to depart. His paranoid ideas slipped into the past. In reports he is described as garrulous, over-confident, etc., but without solid indication of needing hospital care. Later on, when he wished to depart, his wife made objections. Still later, on more than one occasion he made attempts to escape. Finally his son, our patient, applied to take him home; but this was thought inadvisable on account of this son's epilepsy. He was out on trial in a Mental After-Care Home for six months in 1955, but seems to have come back on his own and to be glad to get back. He died of a coronary thrombosis in 1959, aet. 67. For many years his fits had been very infrequent, and there had never been a second attack of paranoid-hallucinatory psychosis.

The other epileptic histories are as follows :—

Case 17

Brother disabled by infantile paralysis, also has occasional grand mal attacks.

Case 28

Father had epilepsy from mid-thirties until a few years before death at 76, grand mal attacks two or three times a week nearly always at night, so that he was able to keep his job as a policeman; never attended hospital; marked mood swings.

Case 30

Maternal half-brother had petit mal attacks from 15 to 20 (not included in statistics).

Case 33

Sister had petit mal from nine to 16, brother had petit mal from childhood till 14.

Case 41

Brother bad-tempered, violent, liable to falling attacks in which he lies for a minute and then gets up again; sister had falling attacks from 10 to 13.

Case 48

Mother had grand mal attacks from seven to fourteen.

The schizophrenic histories are :—

https://doi.org/10.1192/bjp.109.458.130 Published online by Cambridge University Press

Case 43

Mother at 54 was admitted to mental hospital, hostile, suspicious, non-co-operative; she was hallucinated and believed that the staff and patients were all laughing at her, saying she was a wicked woman; she said a microphone was installed in her house, and her thoughts were transmitted by wireless all over the place. She settled down and was discharged three years later, not yet recovered, and died of cerebral haemorrhage at 66 at home.

Case 69

Brother discharged from the Navy with diagnosis "paranoid psychosis", no further information to be obtained.

The other psychoses, or possible psychoses, are:—

Case 20

It is possible that the mother had a "nervous breakdown" at the time of the patient's birth; no more precise information to be obtained.

Case 38

Mother admitted to a general hospital, for treatment to her legs, at the age of 70. She had become euphoric, confused and disorientated as to time and place. In this state she was transferred under certificate to a mental hospital, where she was diagnosed as suffering from a confusional state. After nine months she was taken off certificate and made a voluntary patient, but remained euphoric, rambling in conversation, liable to laugh inappropriately, and without insight. She was so confused that she could not be left alone, and needed constant attention. She had occasional convulsions, which had also occurred at infrequent intervals for six or seven years before her admission.

Case 50

Mother admitted to mental hospital aet. 29, 16 days after the birth of a daughter and femoral thrombosis. She was confused, restless, noisy, inattentive, resistive, hallucinated. For some months there was a variable pyrexia, swelling of the legs, purulent gingivitis. Five months after admission she was still resistive, confused, disorientated. She gradually settled, and was taken home by relatives 12 months after admission, diagnosis puerperal confusional psychosis. Since that time she has remained well, but highly-strung, quarrelsome, sometimes depressed, and liable to talk of suicide.

The "psychopathic personalities" found among the relatives were:—

Case 5

Father suffered from migraine, facial pain and Parkinsonism, and is now deteriorating intellectually; he has been seen by a psychiatrist and has been diagnosed as an obsessional neurotic; he was retired on psychiatric grounds aet. 59, and lives as an invalid, a selfish man with a bitter sarcastic tongue.

Case 13

Father a rather obsessional, pedantic, moralizing, rigid personality.

Case 28

Mother very quick-tempered, spiteful, nagging.

Case 29

Both father and mother nervy, anxious, hypochondriacal, always ailing and unwell with ulcers, bronchitis, etc.

Case 32

Father lifelong alcoholic with marked paranoid tendencies, depressive, interested in Christian Science.

Case 33

Father quick-tempered, irascible.

Case 41

Father a very peculiar man who rarely left his room for many years, wouldn't let his wife in to clean it, having his food sent in on a tray; wouldn't let his wife wash his clothes, would make threats he would leave her penniless, d. 71 without overt breakdown. Sister highly-strung, bad tempered.

Case 55

Father a brilliant man, interested in "astronomy and other mystical subjects", wrapped up in his own world, obsessional and meticulous to a degree, committed suicide at 72, having planned it with great care, settling all his affairs to the last detail.

Case 67

Father used to have "strange temper-rages" in which he would fly off the handle for nothing, then be "as nice as pie"; he also had attacks of extreme jealousy, e.g. would not let his wife maintain contact with any of her old friends after marriage, and constantly kept an eye on her dealings with tradesmen, didn't like her even to meet her own family. He had no friends himself, but was "kind but on the odd side".

Case 69

Father a cold, unlovable, obstinate, dogmatic man.

The children of the probands were too few in number and too young to provide information of statistical value. There were 40 of them, ranging from less than one to 39 years of age, mean 18; and the only psychiatric abnormality was shown by one girl of 16, who had had outpatient treatment for an anxiety state.

The age distribution of parents and sibs is shown in Table III. In order to calculate the incidence of mental abnormality, we may use Weinberg's shorter method. In this method, the total population at risk is determined by assigning a value of 0 to individuals younger than X years, a value of 1 to those older than Y years, and a value of $\frac{1}{2}$ to those between these ages. The limiting ages, X and Y, in epilepsy

https://doi.org/10.1192/bjp.109.458.130 Published online by Cambridge University Press

TABLE III

Age	Fathers	Mothers	Brothers	Sisters	Total
0– 4	—	—	13	10	23
5– 9	—	—	1	2	3
10–14	—	—	1	3	4
15–19	—	—	3	7	10
20–24	—	—	5	6	11
25–29	—	—	7	7	14
30–34	—	—	15	14	29
35–39	1	1	17	17	36
40–44	1	—	10	11	22
45–49	4	4	15	8	31
50–54	11	5	11	12	39
55–59	10	16	7	9	42
60–64	7	11	7	6	31
65–69	16	9	3	3	31
70–74	7	11	—	2	20
75–79	5	5	—	—	10
80–	4	5	—	—	9
Unknown	3	2	—	—	5
Totals	69	69	115	117	370

Distribution of ages of relatives at time of enquiry, or when last heard of, or at death.

can be taken to be 5 and 19, in schizophrenia to be 15 and 39, in "psychopathic personality" to be 15 and 24.

On this basis, we have observed 333·5 risk lifetimes for epilepsy, 286 risk lifetimes for schizophrenia, and 321·5 risk lifetimes for "psychopathic personality". Having found among the relatives 8 epileptics, 2 schizophrenics and 12 "psychopathic personalities", we calculate the incidences of these disorders as respectively 2·4 per cent., 0·7 per cent. and 3·7 per cent.

The incidence of schizophrenia among these relatives is approximately what would have been expected from a sample of the general population, and very different from expectations if our subjects had been schizophrenics. Estimates on the expected incidence of schizophrenia in the parents and in the sibs of schizophrenics could hardly be put lower than 4 per cent. and 8 per cent., leading to an expectation of finding 5·32 schizophrenic parents and 12·24 schizophrenic sibs in our material. Our finding of 2 schizophrenics differs from the expected total of 17·56 by a margin which is significant at the 0·001 level.

Conclusion

We conclude accordingly that, for a parent or sib of an epileptic who develops a schizophrenia-like psychosis, the risk of schizophrenia is no greater than for a member of the general population. The risk of epilepsy may well be raised, though our value is subject to a large sampling error; we have found it to be of about the same value as has been found by previous investigators for the first-degree relatives of "symptomatic" epileptics.

These findings support the first of the three hypotheses enunciated, that the psychoses which we have investigated are to be regarded as symptomatic schizophreniform psychoses of purely epileptic causation—that they are, in fact, epileptic psychoses and not schizophrenic ones from the aetiological standpoint.

https://doi.org/10.1192/bjp.109.458.130 Published online by Cambridge University Press