SUBARACHNOID HAEMORRHAGE AND PARANOID PSYCHOSIS.

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SYMPTOMS of mental disorder are common in cases with cerebral tumours and malformations. Progressive dementia, clouding of consciousness and personality changes make their appearance sooner or later. They have been understood as the result of interference with cerebral functions. However, there are patients in whom the relationship between cerebral lesions and mental disorder is obscure. They present conditions not usually associated with demonstrable structural changes, and the coexistence of mental and physical symptoms appears purely accidental, both running their course independently. In those cases a mutual interaction between the two groups of symptoms can often be observed. In the following case such an interaction could be analysed :

Mrs. B. J. M— was born in 1913, the second of two female children. The home atmosphere was very unhappy. There were constant quarrels between the parents. The father, an alcoholic, deserted the family when the patient was 13 and he has not been heard of since. As a child the patient was excessively afraid of the dark. Her early memories were centred round sibling rivalry, ambivalence towards her mother and fear of her father. She seemed to have been an unwanted child. At school she was shy and self-conscious, but her work was of a good standard. She was always regarded as over-sensitive. At 17 she took up secretarial work and continued in that occupation for eight years. She married in 1938, at the age of 25. She has three children, aged 9, 7 and 5 years at the time of her admission to hospital.

Medical history.—The patient had been physically healthy until February, 1946, when she had a period of severe headaches which incapacitated her for two weeks. Neurological signs were absent. No lumbar puncture was performed. The condition was probably of a similar nature to the two later attacks. In November, 1946, she had a second period of severe headaches, culminating in collapse and semicoma lasting for two weeks. A third attack occurred in August, 1949, when she was comatose for three weeks. During the second and third attacks she was admitted to hospital and remained there for two and four months respectively. On both occasions the c.s.f. contained blood and the diagnosis of a subarachnoid haemorrhage was made. Each time she was free from neurological signs and symptoms, apart from the headaches and the disturbance of consciousness. The recurrent haemorrhages were later proved to be due to a cerebral angioma (see below).

The only other event of medical significance was a Caesarean section in 1948. Pregnancy was terminated in the seventh month because of hypertension and the danger of a recurrence of the subarachnoid haemorrhage.

Psychiatric history.—Neurotic traits in childhood and adolescence have been mentioned above. At the age of 22 the patient had a period of depression lasting for six weeks. Three years later, shortly before her marriage, she had a similar condition. Her attitude to marriage had been ambivalent. She was then suffering from various anxiety symptoms. She was afraid of being alone and had a mild agoraphobia. In 1939 she had a fear of killing herself ; the words " commit suicide " often came into her mind and she was unable to suppress them. This symptom persisted until 1946. Between 1940 and 1942 she feared lest her father came back and beat her, although she was aware that that fear was quite unfounded. In 1944, at the age of 31, she became interested in religion, to which she had previously been indifferent. She formed an attachment to the local parson and sought his advice on problems of all kinds. But it was not until after her first attack of physical illness in February, 1946, that her religious preoccupations became obviously abnormal. She expressed delusional ideas, spoke of the parson as her spiritual husband and called herself her husband's mother. She believed that she was being influenced by the parson telepathically, and that she could influence him and others in the same way. In 1947 the patient moved from the provincial town where they had lived since her marriage to London. Her ideas about the parson receded gradually, only to be replaced by similar ideas about the doctor who attended her in London. His surname happened to be identical with hers. The patient was admitted to the Maudsley Hospital on 13 April, 1951.

The role of emotional stress in the precipitation of physical symptoms.—There were definite indications that emotional stress played a part in the precipitation of each of the three periods of acute physical illness. In early February, 1946, the patient's husband was transferred to London, and he had to leave his family behind until he could find a suitable home in town. He was to be with them during the week-ends only. The patient was very apprehensive about being left alone. At that time she had become emotionally involved with the parson and was in a state of conflict over this. The first attack of incapacitating headaches obviously due to a slight subarachnoid haemorrhage, occurred when her husband's departure was imminent, and when she had become aware of her growing attachment to the parson. At the same time her compulsive suicidal ideas were at their worst, and they were associated with the fear of the return of her father. In that state of emotional turmoil, on the day of her husband's impending departure, the first attack occurred. Shortly afterwards she suddenly felt the absolute conviction that the story of Christ was true and that the parson was a part of God. During the summer she insisted on having her children baptized by the parson. The fear of suicide and of her father receded, but the delusions

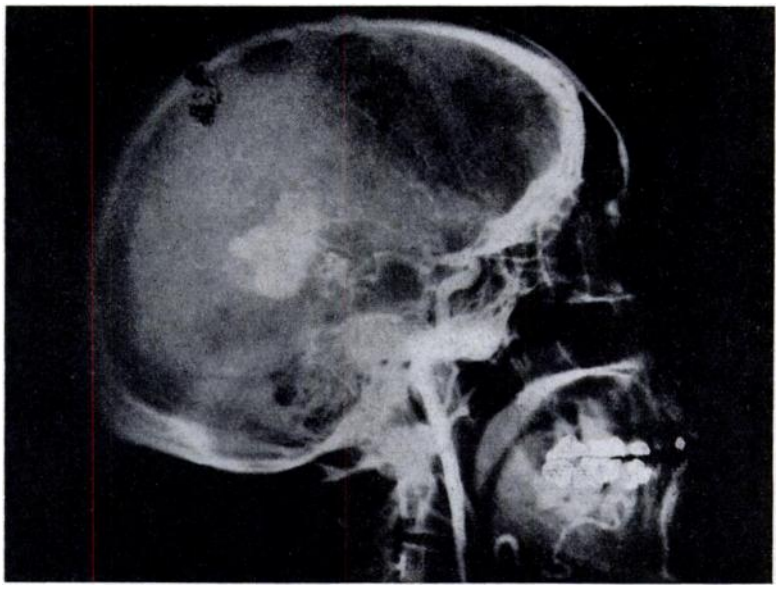

FIG 1.

about her relationship to the parson and her husband remained unchanged. In November she moved to London to join her husband. She was most distressed about having to leave the neighbourhood of the parson, with whom she " communicated by an elaborate system of thought transference." After one week in London she returned to her previous place of residence for a week-end and there the second attack occurred, again in a state of great emotional stress. This time the diagnosis of a subarachnoid haemorrhage was definitely established. Between the second and third attack (November, 1946, to August, 1949) she remained in London. When in 1948 she first attended Dr. M., he soon became the centre of her delusional ideas. The third attack occurred suddenly when the patient was on her way home from shopping. She saw Dr. M.'s car outside her house and collapsed. Her attachment to him was then at its height and she had fantasies of giving " spiritual birth " to him.

The patient's attitude to her physical symptoms and their effect on her mental state.—The patient denied being ill and considered her recurrent illness as spiritual events. The physical symptoms were closely integrated with the delusional experiences. The first attack was regarded by her as an " attack " by which faith in God entered her head. " After this attack I was able to believe in Christ." In the second attack she said, " God entered into me through my head. I feel what has happened since then has been God working through me . . . from then on my mind started to grow." The third attack was experienced as a similar spiritual event but with a variation. " I felt that God entered into Dr. M. ; I had to take suffering for him. He could not take it himself because he was needed by his patients." After that illness she felt more secure and less depressed, an improvement

which was associated with frequent visits to Dr. M. for tablets which were regarded as a sacrament.

Behaviour in hospital.—The patient was admitted in April, 1951. She was anxious and often depressed. She freely expressed the delusions described above and the feeling of being laughed at. She denied her status as a patient, and declared that she had been admitted only to help others through the powers given her by God. She often complained of deep and diffuse headaches. They were " a transference of power—a growth of the spirit." She was suffering like Christ to acquire special powers to help. The pain was regarded as a sacrament—" a part of me is being given to others." On other occasions she believed that her pains were experienced by others. Pain had a twofold meaning to her : it was a means by which she received spiritual power, and also the means of transmitting this power herself. She also expressed a similar idea about the significance of the Caesarean section, which had resulted in the removal of a dead child. She was convinced that the child's spirit was taken out of her womb and transmitted to another human being in need of it.

Psychological tests (Goldstein-Scherer, Rorschach) failed to show signs of organic impairment. The Rorschach test was not typical of schizophrenia.

Neurological examination was negative. No abnormalities of the cardiovascular system could be found on physical examination. E.E.G. recordings did not reveal definite anomalies.

Neuro-surgical investigations were carried out at the Guy's-Maudsley Neuro-surgical Unit. X-ray of the skull was negative. Bilateral common carotid arteriography revealed a large arterio-venous malformation situated in the region of the trigone of the left lateral ventricle and supplied by the left posterior cerebral artery (Fig. 1). The left carotid arteriogram showed filling not only of the posterior communicating and cerebral arteries plus aneurysm, but also of the left middle cerebral branches. The right carotid arteriogram was normal. The location of the angiomatous malformation made surgical treatment impracticable.

The patient was discharged in July, 1951, and was seen in the out-patient clinic at regular intervals. Her psychiatric condition remained unchanged. She was emotionally labile, lacking in interest and energy, but was able to do housework. She was last seen in July, 1952, when her condition was unchanged.

Comment.

This is a case of an extensive angiomatous malformation in the left hemisphere which resulted in two, probably three, subarachnoid haemorrhages. The absence of neurological signs suggests that the blood oozed directly into the subarachnoid space or the ventricles without damaging nervous tissue. From the neurological aspect this patient belongs to a well-defined group (C. P. Symonds, 1923, 1924). From the psychiatric point of view she presented several unusual features which are of general interest. Emotional stress appeared to have played an important part in the precipitation of the subarachnoid haemorrhages. The role of that factor in angiomas has so far not been considered in the literature, though a few observations have been reported which are relevant to this problem. In one of Cushing and Bailey's (1928) cases of cerebral angioma the symptoms become more severe when the patient was depressed. Baruk (1931) reported a similar observation and assumed that emotional stress was liable to cause vascular changes resulting in attacks of migraine. The effect of mental stress on all types of headaches has been amply demonstrated (Wolff, 1948), and migrainous attacks have been known to culminate in rupture of aneurysms (Symonds, 1923 ; Wolf, Goodsell and Wolff, 1945). The sequence of events leading up to the subarachnoid haemorrhages in the case presented here was very similar. A closer psychiatric study of the antecedents of subarachnoid haemorrhages may show that such an effect of emotional stress is far from rare. Rise of blood-pressure might be the chief precipitating agent. Minski (1938) advanced a similar hypothesis concerning the first symptoms of brain tumour, which, in a proportion of his cases, had followed physical and mental stress. More recent studies suggest that rise of blood-pressure might not be the only effect through which emotional stress may cause haemorrhage. Schneider and Zangari (1951) have found that acute anxiety causes shortening of the clotting time and increase in the relative viscosity of the blood. In the case of an angioma this may lead to increased tendency to thrombosis, resulting in a reduction of the abnormal vascular space. Such changes, together with the rise of the blood-pressure, might increase the liability to haemorrhage. If one follows Schneider and Zangari, who regard those changes in the blood chemistry as part of a protective reaction pattern, one might speculate whether they might not also tend to operate against a fatal outcome of such an occurrence.

The emotional stress under which this patient was labouring was all the more powerful as it was fed from delusional beliefs. The relationship of the paranoid psychosis to the vascular malformation in the brain was certainly not one of cause and effect, though the changes within the angioma may have contributed to the development of the mental disorder which otherwise may have remained latent. It is futile to speculate whether such an effect be due directly to some structural change, or to a vague awareness of physical illness which, in a predisposed subject, may have called forth abnormal mental reactions.

The early symptoms of mental disorder seem to have appeared before the first episode of physical illness, but there can be no doubt that the three attacks had a profound influence on the patient's mental state by exacerbating and modifying it. It was only after the first episode that the delusions came into the open. The attacks were experienced as an important event within her world of delusions, and on each occasion the centre of happenings was the head, which was the site of the physical symptoms. Only in that part of the body were the boundaries between the self and the non-self broken ; the patient felt that supernatural power poured into it from outside and emanated from it to other people. Thus physical illness attacking the head was not only denied as such, but the symptoms were transformed into experiences of magic omnipotence. It must be remembered that the head holds a special position in the body scheme ; injuries to and symptoms on the head tend to have a profound psychological effect, usually causing an excessive awareness of illness and discomfort affecting that part of the body. In this case, on the contrary, there was complete denial of physical illness, the symptoms of which mobilized, and threw into relief, mental mechanisms common in schizophrenics, i.e., the blurring of the boundaries between the self and non-self, associated with overt projection and introjection. There was only one other occasion when similar mechanisms were associated with an event in another part of the patient's body, again one that is of outstanding importance psychologically ; the Caesarean section was experienced in the same way as the head symptoms.

It is noteworthy that the attacks of physical illness, which were denied by means of emotionally charged (katathymic) delusions, had been precipitated by emotional stress flowing from the same sources as the contents of the delusions, i.e., the patient's relationship to the other sex, which had been profoundly disturbed from childhood. The patient's unhappy relationship to her father had played an important part in the etiology of the anxiety symptoms, of which the patient had never been free from childhood onwards. The limitation of her delusional experiences to a certain area of her emotional life enabled the patient to live outside hospital and function comparatively satisfactorily as mother and housewife.

The denial of physical illness and the substitution of its symptoms by delusional experiences observed in this case is akin to anosognosia and other " neglect phenomena " ; but in those cases symptoms of physical illness, though denied or distorted, are not experienced as part of a profound change of the patient's relationship to the outer world as it happened here. That peculiar quality is more likely to attach itself to physical symptoms in schizophrenics than in other subjects. Hemphill and Stengel (1942) reported similar reactions in paranoid schizophrenics where physical illness or surgical interference had resulted in a break in the body surface. The authors expressed the opinion that the precariousness of the boundaries of the body image in those patients favoured delusional interpretations of physical symptoms in terms of strictly localized introjection and projection. The patient presented here showed that tendency not only in the way she experienced the cranial symptoms, but also in her interpretation of the significance of the Caesarean section. She demonstrated the distortion of reality through autistic thinking.

Conclusion.

A case has been described in which attacks of subarachnoid haemorrhage from an angioma had been precipitated by emotional stress. The patient was suffering from a paranoid schizophrenia. The way in which the attacks of physical illness exacerbated and modified the abnormal mental state has been analyzed.

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