PSYCHOSES FOLLOWING APOPLEXIES.*

By JOHN H. W. RHEIN, M. D.,

Professor of Diseases of the Mind and Nervous System at the Philadelphia Polyclinic and College for Graduates in Medicine, Neurologist to the Howard Hospital, Physician to the Philadelphia Home for Incurables, Philadelphia, etc.

A review of the literature will reveal the fact that post-apoplectic psychoses have received less consideration than the subject deserves, in fact not a great deal has been written about this symptom-complex.

That a perverted mental state occurs after an apoplexy in a certain number of cases has always been recognized, but the textbooks on the whole have described this condition in a more or less perfunctory manner.

The usual and best recognized form of mental change after an apoplexy consists of a simple moderate intellectual defect characterized by failing memory, emotionalism and defective will. Beside this, however, there may develop a progressive dementia, best described as dementia post-apoplectica.

But more rarely there occurs a certain mental state which has features which are more or less characteristic of a post-apoplectic psychosis. It is to illustrate the last, that I venture to report two cases which recently have come under my observation in private practice and which I have had the opportunity of studying from the very onset of the mental symptoms, an event which is not often afforded the alienist who is more apt to be called to the care of such cases later in the course of the disease.

The following cases are practically identical in their clinical features and seem to present a phase of post-apoplectic psychoses which is infrequently observed.

CASE I.—M. H., aged 54. Father died of pneumonia; mother died of apoplexy and showed some mental change before the attack. A maternal uncle died of apoplexy, and a maternal sister died in an institution for the insane. Two brothers were living and well. One brother died of tuberculosis and one brother in infancy.

* Read at the sixty-ninth annual meeting of the American Medico-Psychological Association, Niagara Falls, Canada, June 10-13, 1913.

The previous history was negative, except that for some years she has suffered from pelvic trouble, dependent upon an anti-flexed uterus. The menopause occurred at 49 years of age.

For two or three months before the attack of apoplexy she had complained of nervousness consisting of irritability, being readily disturbed upon slight provocation and of a tendency to fall asleep in the trolley cars. There was also sugar found in the urine on one occasion. Under appropriate diet and general measures the sugar disappeared and there was considerable improvement in her general condition.

On January 14, 1913, she fell to the ground without loss of consciousness. This occurred on two or three occasions during the ensuing two days, and finally on the 16th of January after falling again the left arm and leg and left side of the face became paretic. Consciousness was not disturbed and the mental condition was good. On the fourth day the patient became emotional and depressed, complaining of headache and the paralysis became more profound until at the end of ten days she was completely paralyzed in the left side of the face, in the lower distribution and in the left arm and leg.

About the end of the first week there developed restlessness, depression, complaint of pain in the head and affected limbs. Less than three weeks after the attack she became noisy by night and during the day she was very despondent, crying much of the time, shouting for help and complaining that those about her were not affording relief and were neglecting her.

Later she believed that many people were in the same bed with her, that she had two heads and that the bed was on fire. She became completely disoriented as to time and place.

These mental states at first occurred in attacks lasting one or two hours. In the interval she moaned with pain, or cried bitterly and was depressed.

The episodes varied in character. She was disoriented all of the time. She was always away from home, sometimes in a hospital attached to a church in an adjoining parish; sometimes she was living in another world; sometimes she was in a convent and controlled by priests; sometimes she was confined in a house of ill-fame and was surrounded by half-dressed men and women from whom she could not escape. She had been taken to the house of ill-fame by a young fellow who drove her there after forcing her into a cab. This was a great disgrace and the day following this episode she thought she should go to communion.

Later these delusions persisted for many hours and days, changing from one to the other from time to time. They showed the following variations: She had gone to visit her parents (who were dead); liniments applied to her limbs were poison; the nurse put poison in her food and the medicines injected or given by mouth were poison. Paint was put in the milk which she refused for this reason. She wept bitterly over the funeral of a big fish. The Queen of Sheba had presented her with jewels. She was greatly depressed over the belief that she was gradually becoming a negro. Her bed was a carriage and her feet and legs the horses. She thought she was dead and in a coffin, and talked a great deal about funerals and undertakers.

Her legs were fish and her hand a baby. Her leg had been crushed in an accident and had been amputated. She had two heads.

She manifested most of the time hallucinations which varied in character. Italians were in the house, and dogs wandered about her bed. Repeatedly large numbers of fish filled the air of her room, some walking, some flying. The faces of maimed children and babies were often seen.

She was very noisy especially at night. She resented the lateness of the visits of her physicians and when they moved her during examinations giving her pain, it was done on purpose to hurt her. She repeated words and phrases over and over again. (Perseveration.)

This condition persisted until March 30, 1913, two months after the attack when she underwent a febrile reaction lasting ten days in which the temperature rose to 102°, and was associated with vomiting and abdominal distention. After this attack she improved quite rapidly in all ways, until three weeks later she became quite normal mentally.

She ceased to complain of pain and there was also considerable return of power in the paralyzed limbs. She improved to the point of being able to take a few steps assisted.

An early and persistent symptom was incontinence of the urine and faeces. The examination of the heart and lungs was negative and the urine showed at times traces of albumin, and occasionally a few granular and hyaline casts. At no time could the kidneys be said to be a factor in the causation of the mental or other symptoms. The arm jerks and knee jerks were increased and more so on the left side and the Babinski phenomenon was present on the left. No change in sensation was noted, and there was no hemianopsia.

She stated after her recovery mentally that she thought that all the time she was sick she was in an opium den, or that she had been travelling or was among enemies. The hypodermics administered during her illness she believed was associated in her mind in some way with the morphine habit which she thought she had contracted. She remembers seeing horrible sights but the most painful memory was that she was confined in some house and could not get away to go home.

The mental condition in this case may be summarized as follows: There were maniacal outbursts; delusions mainly painful and persecutory; hallucinations, phantasmagoric and depressing; disorientation, and perseveration. Especially to be noted is the great complaint of pain in her head and palsied limbs, and the depressive state.

CASE 2.—A. C., aged 64. Father died at 77 of senile change and heart disease; mother died at an early age of phthisis; one brother died of heart disease; otherwise the family history is negative.

Fifteen years before the attack of apoplexy she had had an attack of neurasthenia and thereafter began having stomach trouble which persisted until a year before her attack, when a rest cure was given and

she recovered, remaining in good health until October 3, 1912, when she complained of continual pain in the right side of her head. On October 4, she awoke and found her left arm useless but she recovered from this in the afternoon except that she dropped things from her hand from time to time.

On October 7, 1912, she fell down from weakness in her left leg and felt weak in her left arm. At the same time the pain in her right temple became intense. On October 12, 1912, suddenly there was some confusion of speech and on the following day she lost power in the left arm and leg, the paralysis becoming complete in four days. From the beginning there was continual complaint of pain in the right temple and in the left arm and leg. She was very restless, moaning constantly and complaining that those about her would not give her relief. Two days later she showed some mental confusion. She believed she was on a boat, saw relatives in her room (who live miles away), thought she was in Atlantic City and saw soldiers and processions in her room. Then in a few days she saw phantoms and conversed with imaginary people. She was noisy and cried out at night and passed her urine involuntarily. She talked constantly, except when asleep, complaining of the unkindness of those about her, turning against her daughter her nurse and doctor and slept only under the influence of hypnotics.

She believed she had gone to New York on the 1.45 p. m. train and had come back at 6 p. m. the same day. She said she was not tired and stood the journey very well indeed, having walked around a good deal in New York and had gone to see a play called, "When Bunty Pulls the Strings."

She was most of the time very much disoriented as to time and place. She was very noisy especially at night, complaining a great deal of pain in the head and affected limbs and shrieking so loudly that the neighbors could hear. She was depressed most of the time abusing those about her for not giving her more relief. She often saw dogs and children's faces about her.

On December 2, 1912, there was some improvement in her mental condition for a short time but in a few days again she became irrational, very confused and talkative, moaning and crying. She was in a pulman car again, did not recognize her daughter, her doctor, or her nurse, talked continuously to imaginary people, and was still very noisy.

On January 4, 1913, she became stuporous, moaning and crying loudly, a condition which persisted until about March 22, when she began to clear up, mentally, recognizing everybody and conversing intelligently. Her mental condition continued very good for a month when, after an attack of the mumps, she again complained of great pain in the left leg and arm and cried most of the time although otherwise was clear in her mind.

The heart and lungs at no time showed any abnormality and the urinary analysis was negative. The reflexes were generally increased, more markedly so on the left side. No sensory changes were noted and an examination of the fields of vision failed to reveal any hemianopsia.

To summarize, the mental state was characterized by mild hallucinations; delusions somewhat persecutory and depressive; disorientation and maniacal outbursts. As in the first case cited the complaint of pain in the head and paralyzed limbs was a marked feature.

In both of these cases there was evidently a thrombosis, probably in the basal ganglia, if the central pain complained of in the affected limbs can be said to have a localizing value. Recently I¹ studied the subject of central pain and concluded that the most frequent site of the lesion causing this phenomenon was the basal ganglia especially the optic thalamus.

These two cases illustrate a form of psychosis after apoplexy which is I believe of not very frequent occurrence.

It is unlike the dementia post-apoplectic of Ziehen,² Bianchi,³ or the post-apoplectic Schwachsinn of Kraepelin⁴; or the dementia occurring after apoplectic seizures described by Oppenheim,⁵ Griessinger⁶ and others. These are the usual forms of post-apoplectic mental disturbances and consists of an alteration of the will and the affective faculties associated with a diminution of the intelligence. The patient is restless, irritable, sensitive and shows some change in the character; his memory fails; he is childish; he exhibits shamelessness and other changes in the ethical viewpoint.

My cases resemble somewhat, but still differ from those described by Dupré⁷ which exhibit symptoms characterized by excitation, depression, absurd acts, incoherence, demential manifestations, cerebral automatism, incoordination, insomnia, complaints of injury, profanity, incontinence, constituting a *démencé agitée*.

While Dupré and others describe post-apoplectic mental symptoms characterized by delirium, hallucinations, hypochondriacal and depressive mental states with the same characteristics which my cases exhibited, it is not clear that these symptoms constitute an acute curable psychoses; but rather that they are added to or are a part of a progressive and incurable dementia.

It must be understood that both of my cases recovered their normal mental state though perhaps with some simple enfeeblement and certainly not to a full mental vigor, and were therefore not cases of dementia upon which was grafted a delirium, a mania,

a hallucinosis or what not but were examples of an acute psychosis of a curable type.

Legrand du Saulle* in 1881 gave a very good description of the mental state following apoplectic seizures. He divided the symptoms into three classes.

(1) Those in which the intellectual decline is consistent with a civil and moral responsibility and consists of some change of the character and a weakening of the will; (2) those cases in which the patient is sensitive and emotional with feeble memory and lack of decision and spontaneity, a condition which he says cannot be called either dementia or yet a normal mental state; and (3) those cases in which the patient is more or less disoriented, forgets the identity of the people surrounding him, in which judgment is lost, in fact in which there is a true dementia. This includes also cases in which there are delirium, apprehensions and fears, ideas of persecution, depressive ideas, hallucinations at night and maniacal states, a condition which may go on to a complete dementia.

As far as the symptomatology is concerned my cases fall into the last class described except that no true dementia was at any time manifested by my patients.

Ziehen described a mental state as the result of a thrombosis bearing marked resemblance to the symptoms presented by my cases; namely, disorientation, delirium, perseveration, and particularly a weakening of the attention. He also stated that symptoms of Korsakoff's disease may be manifested.

It will be noted that the delusions in my cases were mildly persecutory in character. This has been noted by Dupré, Lwoff,⁹ Legrand du Saulle, Clouston¹⁰ and Magnan,¹¹ in their descriptions of the delusions of psychosis after apoplexies. Benon¹² observed this type of delusions in 24.1 per cent of his cases.

In my cases there was a hypochondriacal as well as a depressive tinge to the delusions and this has been observed by Ferriere,¹³ Dupré, Magnan and Benon.

There was a distinct tendency in these cases to maniacal out-breaks which occurred mainly at night, and were paroxysmal, a condition which had been noted and described by Lwoff, Dupré and Griessinger.

Hallucinations occurred in my cases and persisted throughout the entire course of the disease and were persecutory, phantasmagoric, and depressive in type. The hallucinations occurred during the late afternoon or at night which is characteristic.

They are described by du Saulle as unhappy, persecutory and frightful. In Dupré's experience they consisted of phantoms, animals, terrifying forms and painful hallucinations of smell. The terrifying nature of the hallucinations of sight have been noted also by Charon,⁴ and Magnan. Sometimes hallucinations of taste, odor and general sensibility have been observed. (Dupré.) They were presented according to Benon in 17.35 per cent of one hundred cases of hemiplegia.

Position of lesion. Benon has shown that in 51.5 per cent of the cases of post-apoplectic psychoses the palsy is left-sided, and in 48.9 per cent right-sided, therefore practically showing as he believed no preference for either side.

According to Luys,⁵ lesions in the left side were almost always accompanied by emotional excitation coexistent with pain in the palsied limbs. This is the only reference to pain in the affected limbs that I was able to find in the literature. It will be remembered that both my patients complained of great pain, spontaneous in character, before any symptoms of psychosis developed and persisted until the mental condition cleared.

Lesions of the first temporal region are said especially to give rise to emotional disturbances (Brissaud,⁶ Luys, and Seguin⁷) and softening of the corpora striæ, the insula and the external capsule, Luys believed were also characterized by emotionalism.

Psychic symptoms according to Dupré predominated in alterations of the anterior part of the brain especially in the frontal lobes and in affections of the corpus callosum.

Intellectual disturbances with speech defects was recognized by Hoch as due to implication of the large ganglia and according to Clouston the most frequent site of the lesions in these cases was the basal ganglia. Lesions of the thalamus causes great emotivity according to Bianchi a fact born out by the observations of Holmes and Head⁸ and others.

Lesions of the left side of the brain cause defects of intelligence, Bianchi stated, much more than on the right side due to the loca-

tion of the center of the functions of speech on the left side. Journiac²⁸ described a case of melancholia with suicidal and homicidal impulses as a result of hemorrhage in the lenticular nucleus without palsy.

Dupré believed that the mental disturbance was proportional to the extent of the lesion and the extent of the cortex implicated.

Ziehen stated that after a thrombosis the intellectual decline is more intense than after embolism or hemorrhage. On the contrary Kraepelin agreed with Mingazini that it made no great difference whether the lesion was a hemorrhage or a thrombosis.

The mental symptoms developing after an apoplexy are looked upon as due to the diffuse vascular lesion of the brain which is associated with the hemorrhage or thrombosis (Ziehen, Charpentier,²⁹ Ricksher,³⁰ Paton³¹). Oppenheim called attention to the fact that the dementia was seldom the result of the seizure or caused by the lesion itself merely, but was rather the outcome of this, plus general disease of the cerebral vessels and their consequence, and Bianchi also believed that the arterial sclerosis explained the mental symptoms after cerebral softening.

Autointoxication according to some authorities is the cause of the mental phenomena. Charpentier called attention to this, and Dupré believed that mental confusion with disorientation and anxious states may be associated with hepatic and renal insufficiency which appear to be related to the toxic and infectious nature of the psychic phenomena.

Symptoms of Korsakoff's disease which occurs in some cases, an occurrence described by Ziehen, suggests a toxic origin for this condition.

In these cases it is to be noted that there is in some instances a predisposition (Dupré and Magnan³²), and the rôle played by heredity (Clouston) and alcohol must not be overlooked (Lwoff).

The prognosis is unfavorable in the usual forms of psychoses described. The dementia is looked upon as being progressive (Ball and Chambard³³ and Benon), and is said to be worse in those cases in which there are foci of softening. Benon believed that the mental troubles rarely ameliorate. On the contrary the cases herein described show that there may occur a form of post-apoplectic psychosis which is recoverable.

A mental state preceding the attack has been described by Savage¹¹ expressing itself as irritability, emotionalism, poor memory, simple pain in the eyes, and hallucinations of hearing. Ball and Chambard stated that it was rare for the attack not to be preceded by sensory and intellectual troubles for weeks or months due he believed to atheromatous states of the cerebral arteries. A prodromal stage was described by Benon consisting of antero-grade amnesia, diminution of attention, modification of character, delirious ideas, excitation, depression or confusion. No mental symptoms preceding the attack were noted in my cases.

Evidence of autointoxication either from renal or hepatic insufficiency was lacking in my cases. There was in the first case described a distinct element of hereditary predisposition and both cases were of an age when arterial sclerosis of the brain could be expected to be present.

In conclusion I wish to emphasize the following features of these cases, namely, the acuteness of the attack; the curability of the psychosis; the presence of pain in the head and in the affected members; the depressive, hypochondriacal trend of the mental symptoms; the presence of perseveration; the occurrence of hallucinations of an unpleasant type and finally maniacal outbursts, the hallucinations and maniacal manifestations being worse at night.

REFERENCES.

1. Rhein: Jour. of Ner. and Men. Dis., 1912, p. 660.
2. Ziehen: Psychiatrie, 1911, p. 310.
3. Bianchi: Text-book of Psychiatry, 1906, p. 846.
4. Kraepelin: Psychiatrie, 1904, Vol. 2, p. 483.
5. Oppenheim: Text-book of Ner. Dis., 1911, Vol. 2.
6. Griessinger: Mental Pathology and Therapeutics, 1882, p. 123.
7. Dupré: Ballet. Traite de Path. Ment., 1903, p. 1065.
8. Legrand du Saulle: Gaz. des Hos., 1881, p. 537.
9. Lwoff: Etude sur les troubles intellectuel liés aux lésions Circonscrites du cerveau. These de Paris, 1890.
10. Clouston: Men. Dis., 1904.
11. Magnan: In Dupré.
12. Benon: These de Paris, 1905.
13. Ferriere: These de Paris, 1889.
14. Charon: Arch. de neurol., 1899, Vol. 8, p. 433.
15. Luys: In Ball and Chambard.
16. Brissaud: In Charon.

17. Seguin: In Paton.
18. Holmes and Head: *Brain*, 1911, p. 255.
19. Charpentier: *These de Paris*, 1904.
20. Ricksher: *Am. Jour. Insanity*, 1906, p. 55.
21. Paton: *Psychiatry*, 1905, p. 546.
22. Ball and Chambard: *Dict. des Sciences Médicales*, 1st Série, 1882, p. 581.
23. Savage: *Jour. of Ment. Science*, 1883, p. 90.
24. Journiac: *Ann. Médico-Psycholog.*, 1891, xiii, p. 431.