ACUTE CONFUSIONAL INSANITY AND DELIRIUM.

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(Received February 1, 1944.)

THIS condition, in which severe confusion, disorientation, and restlessness are the principal features, appears to have been first clearly described by Bell (1845), who noted that about 2½ per cent. of the patients admitted to his asylum showed a particular syndrome: they were normal people who were admitted after about a week's acute illness; their appearance and speech suggested fever and delirium like a typhoid state; understanding was limited; they were apprehensive, with distressing but confused delusions; they disliked and suspected their food, and were not sensible enough to be thirsty; they tried to get out of bed, were sometimes violent, and struggled strongly when held. The course of the illness was rapidly downhill, but about a quarter of the patients suddenly made a complete and permanent recovery at the end of two to three weeks, the remainder dying in the same time. There were no specific post-mortem findings.

A better known description is Chaslin's (1895), but it is probable that he included some cases of other psychoses. He noted that there is a variable incubation period, and described various types. The termination was by recovery, chronic confusion, or dementia—these latter groups would now be accounted dementia praecox or, ingenuously, by " la mort, soit dans le cours de la maladie, soit à la fin."

The syndrome has been given various names: acute confusional insanity, acute delirious mania, Bell's mania (Kraines, 1934), collapse delirium, delirium grave, exhaustive or hyperactive mania, idiopathic acute delirium, specific febrile delirium, toxic-infective psychosis, toxic-infective-exhaustive psychosis, and typhomania in English; while foreign names include amentia (U.S.A., Holland and Italy), *délire aigu* and paranoia hallucinatoria acuta. Bleuler (1923) includes most of the cases, with paranoia, paraphrenia, and dementia praecox, in his motley schizophrenic group, and the rest under the heading " organic syndrome." Henderson and Gillespie (1936) deny its existence as a clinical entity. Names that include the word " mania " are misleading and should be avoided, for the patients do not show the characteristic triad of emotional exaltation, flight of ideas, and psychomotor acceleration. The change in mood is inconstant and more often to depression than exaltation, thought is too muddled to be quickened, and volition is lost. Acute delirious mania is a term applied to the syndrome when accompanied by pyrexia—a sign which is insufficient to merit a separate group.

The subject has been reviewed by Curran (1934), whose cases were all apparently due to purely physical causes, and he has made another contribution to the subject (1937) in which he states that 75 per cent. of his hundred odd cases recovered within three weeks. This experience is at such variance with that here recorded on unselected cases, even if it be weighted unfavourably by including some possible instances of organic dementia, that it seems that Curran's experience was unusually favourable because his cases were drawn from institutions that accepted only mild cases of mental disorder. The absence of cases of psychological origin from his series is difficult to understand.

In this paper it is proposed to show that the aetiology may be physiogenic or psychogenic, but that all cases depend on a similar mechanism. To the physiogenic group the term " delirium " will be applied, and to the psychogenic the term " acute confusion." The cases studied were all that were admitted to the Leicester City Mental Hospital during a consecutive period of 56 months. In that city there are no observation wards or other mental institutions able to deal in any way with persons showing gross behaviour disorders, and so there is reason to believe that all severe cases have come under this survey.

Out of 1,043 direct admissions there were 51 cases of acute confusion and delirium (5 per cent.). In 30 of them the family history was investigated, and in only six of these was it positive for mental disorder of any sort. Cases of alcoholic insanity, cerebral syphilis, concussion, epilepsy, and puerperal or pregnancy insanity were omitted, since they require separate consideration, although there is evidence that similar mechanisms operate in at least a proportion of them. Mixed cases, e.g. those passing from confusion to another psychosis such as dementia praecox or melancholia, were also excepted, since they have mixed aetiological factors, which would complicate the investigation.

DELIRIUM.

TABLE I.—*Fatal Cases.*

Number.	Sex.	Age.	Duration of illness from admission to death.	Cause of death.
1	F.	64	7 weeks	Right frontal tumour.
2	F.	67	12 ,,	Pernicious anaemia.
3	F.	65	4 ,,	Bronchopneumonia.
4	F.	55	5 days	Subarachnoid haemorrhage.
5	F.	75	1 day	Carcinoma of breast with secondary deposits in lungs.
6	F.	59	5 days	Cerebral haemorrhage.
7	F.	70	9 weeks	Carcinoma of lung with secondary deposits in brain.
8	F.	53	2 ,,	Broncho-pneumonia and arteriosclerosis.
9	F.	38	1 week	Pellagra (imbecile).
10	F.	67	3 days	Bronchopneumonia.
11	F.	62	4 weeks	Thyroid tumour.
12	F.	58	3 ,,	Cerebral embolism.
13	F.	68	1 week	Carcinoma of cervix uteri and auricular fibrillation. (No P.M.)
14	F.	56	2 weeks	Apoplexy. (No P.M.)
15	F.	28	2 days	Influenzal pneumonia.
16	F	71	4 weeks	Bronchopneumonia, cystitis, and nephritis.
17	F.	75	12 ,,	Cellulitis and carcinoma of stomach.
18	M.	63	2 ,,	Cerebral arteriosclerosis and thrombosis. (No P.M.)
19	M.	66	1 week	Cerebral softening.
20	M.	46	2 weeks	Cardio-renal failure.
21	M.	71	2 ,,	Carcinoma of stomach and right middle meningeal haemorrhage.
22	M.	56	2 ,,	Lobar pneumonia and cerebral atheroma.
23	M.	66	7 ,,	Bronchopneumonia and arteriosclerosis. (No P.M.)
24	M.	45	6 ,,	Phthisis and perforated gastric ulcer (imbecile).
25	M.	55	7 ,,	Bronchopneumonia.
26	M.	64	1 week	Carcinoma of lung.
27	M.	53	2 weeks	Bronchopneumonia.
28	M.	38	5 ,,	Chronic encephalitis.
29	M.	56	1 day	Lobar pneumonia.
30	M.	52	2 weeks	Coronary atheroma and subacute nephritis.
31	M.	66	3 ,,	Carcinoma of lung with secondary deposits in brain.
32	M.	72	6 days	Bronchopneumonia.

There were 44 cases whose mental breakdown was directly attributed to physical disease, and whose histories all showed an absence of severe emotional stress. 32 of them died in the hospital (73 per cent.), all within three months of admission (Table I); 11 were discharged alive and mentally well (25 per cent.), but one of

https://doi.org/10.1192/bjp.90.380.761 Published online by Cambridge University Press

these was suffering from secondary carcinoma of the breast with deposits in the brain and she is unlikely to have survived long (Table II).

TABLE II.—*Cases Not Dying in the Hospital.*

All these were discharged recovered or relieved mentally, with the exception of No. 43.

Number.	Sex.	Age.	Time in hospital.	Diagnosis.
33	F.	47	28 weeks	Secondary carcinoma.
34	F.	49	32 ,,	Bronchopneumonia.
35	F.	45	12 ,,	Cerebral embolism and auricular fibrillation.
36	F.	46	59 ,,	Microcytic anaemia (dull and backward).
37	F.	47	7 ,,	Pneumonia.
38	F.	69	8 ,,	Carcinoma of rectum.
39	F.	54	6 ,,	Pneumonia and nephritis.
40	M.	42	5 ,,	Naso-pharyngeal infection.
41	M.	33	6 ,,	Quinsy.
42	M.	42	4 ,,	Phthisis.
43	M.	40	1 week	Cerebral tumour.
44	M.	54	6 weeks	Phthisis.

Comparison with the total deaths in the City of Leicester during approximately the same period, classified according to disease and age, showed that the cases in Table I differed in certain significant particulars. As was to be expected, the proportion of deaths from cerebral vascular accidents was higher in our series, and so was that from pneumonia—perhaps because it is an acute disease with distressing dyspnoea. But the proportion of deaths from phthisis, heart disease, and nephritis is lower in our series, possibly because of their chronicity, during which the organism can adapt itself to them. On the other hand, we have a relatively higher number of deaths from carcinoma although the disease is so chronic, but two out of our seven fatal cases had secondary deposits in the brain, and the pain, and mental shock of knowing that he has cancer, may well drive the patient distraught.

ACUTE CONFUSION.

There remain seven cases in which no adequate organic cause for the illness could be found. In each of them an emotional upset was evident. They will be described in more detail.

CASE 45.—A simple-minded spinster, aged 58, a hosiery worker, who cared for an invalid and pampered sister, with whom she shared her house, was admitted on June 7, 1940. Her condition was one of severe confusion with no physical signs nor evidence of injury. After steady improvement she left hospital fully recovered on October 1, 1940. She stated that a few days before admission she had fallen on to her head in the back yard at home and that this had completely unnerved and upset her.

CASE 46.—An eccentric, single woman, aged 52, who had been allowed her own way ever since an attack of chorea when she was 12, was admitted on June 22, 1940. Fourteen years previously she had been jilted by her young man after an engagement of ten years, and she then had a "nervous breakdown." In 1938 another fiancé left her just before their marriage, and she had a second breakdown. Neither of these attacks was treated in hospital, and it was not possible to find out their true nature. The present one occurred on the eve of a family wedding. On admission she was utterly confused and disorientated, her conversation being limited to the wedding and whether she should wear silk drawers to it! She was discharged well on August 1, 1940. There was a history of a cousin having tried to gas herself two years before.

CASE 47.—A 19-year-old single girl, exceptionally small, weighing 5 st. 8 lb. and being well proportioned, had made few friends and had been nervous since falling down some steps at school. Shortly before her admission on August 22, 1940, she and her sister went to a swimming-pool together. A boy there dived on to her back, sinking her. Being a poor swimmer, she was panic stricken. She struggled out. As she got to the top of the steps the boy, in sport, pushed her back into the water. She went home, but was depressed and moody for a fortnight. Then, three days before admission, she became restless. Her parents tried to restrain her by force. She grew worse. On admission she was excited and restless pirouetting about the ward and

https://doi.org/10.1192/bjp.90.380.761 Published online by Cambridge University Press

speaking in a stilted manner with a French accent. She was confused, disorientated, hallucinated—constantly seeing bears, and she had to be fed by tube. Recovery was gradual, but complete before her discharge on November 16, 1940. Her father had been in a military hospital in 1924 owing to a mental breakdown, and his sister was a patient in a mental hospital.

CASE 48.—A single hosiery worker, aged 20, who was said to have been in hospital with kidney trouble three years before, was admitted on July 4, 1941. On June 12 she had registered for compulsory national service. The prospect of a change of employment demoralized her; nevertheless, on June 20 she was transferred to entirely new work. This overwhelmed her, as she was utterly unable to cope with it. She became more and more dazed, and on the 25th she said, "Oh, Mum, I'm going to die." Two days later she was so confused that she had to be sent to a general hospital, where all tests for organic disease were negative and her mental state deteriorated so that on July 4 she was transferred to the mental hospital. Here she was found to be completely confused, inactive and faulty in habits. She steadily improved, to become her normal self. Her I.Q. on the Cattell Scale was found to be 86, and on Raven's Matrix Test she scored 11/60, i.e. too little to be ranked on a percentile basis. When questioned about her illness she said that her new job had upset her. It appeared that she was a dull girl, who, although able to cope with her simple routine job, was quite unable to adapt herself to fresh conditions.

CASE 49.—A single shop girl, third in a family of seven, had been brought up by a spinster aunt since the age of seven, after a severe illness, said to have been tuberculosis of the bowels. This aunt, a village schoolteacher, although kind, was extremely strict and, considering herself a superior person, she did not allow the patient to play with the other children, nor to associate with the neighbours as she grew up. On retirement the aunt took a shop at a tiny and remote seaside place and retained the patient as her assistant. Alas, this secluded shelter did not last; it was shattered by the war. The patient had to register for national service. She was terrified. She feared that she would now be thrown into contact with the world, which she had always been taught to dread and shun. In her distraction she gave short change to the postman, a middle-aged, married man, whom she had reason to dislike and distrust, for two years before he had forcibly kissed her. She had never dared tell of this rapacious assault. Now she felt that she had robbed him. She became more and more confused. The aunt dispatched her to her parents in the Midlands, and they immediately sent her to the mental hospital. She was admitted on October 15, 1941, and was then completely confused and incoherent. But her condition there steadily improved until she was discharged recovered on January 6, 1942, with an I.Q. of 86 on Cattell's Scale, and a rating that put her in the lowest 5 per cent. of the population on the Matrix Test.

CASE 50.—An old single lady, aged 77, of independent means, was admitted on April 22, 1942. One of fifteen siblings, as a child she was disliked by her four stepsisters, but otherwise her life had been uneventful and she lived in a bungalow at a seaside resort, where she had numerous friends. A year and three-quarters before admission she was persuaded, owing to the war, to come and live with a rather hard-hearted half-niece, who took her as a duty, in a large East Midlands city. Finally she arranged to sell her old home, although this was a great wrench to her. She was quite overwhelmed by the mass of deeds and documents involved. Three weeks before admission they were received for her final signature. Her memory now began to fail. A week later she took to bed. Her mental condition continued to deteriorate and she alleged that the agents and vendors of her house were thieves. Her unsympathetic surroundings did not help her and she grew excited. The niece and her maid stayed up all night, fighting with her in order to keep her in bed. On admission to hospital she was pugnacious and wildly excited, screaming incoherently. Physically she was arteriosclerotic with aortic regurgitation and a blood pressure of 160/75. On the following day she was still confused and showed remarkable echolalia for all sounds. She occupied herself in imaginary washing, folding, and wringing like a presbyophrenic. The next morning her mind was clearer, and two days later she was sensible and rational, with insight, although still physically feeble with a blood pressure of 185/80. She grew stronger, and was discharged recovered on May 20, 1942.

CASE 51.—A labourer, aged 57, accidentally caught his arm in a hoist in December, 1937, necessitating three weeks off work. In the middle of March next he complained of headache and pain in the left side. His doctor told him it was pleurisy. After a few days he began to rave, and had to be admitted to the mental hospital on April 9, 1938. He was then severely confused and thought that he was working some machinery. He had arteriosclerosis with an enlarged heart and a blood pressure of 175/85. Recovery was rapid, and he was discharged well but for a poor exercise tolerance on May 25, 1938.

These seven cases have one feature in common—they all followed a sudden severe emotional shock. Further, the illness was not immediate, but came on in a few days after a varying latent period which rarely lasted more than a couple of weeks. The cases themselves call for some comment. It is possible that Case 45 was really one of concussion, but the physical signs and course did not support this diagnosis. Case 46 was unusual, and it is possible either that the diagnosis was wrong or the history incomplete. Case 51 was of mixed aetiology, since there was an organic element as well as an emotional one.

It will be noticed that all the patients showed some personal peculiarity. Cases 45, 48 and 49 were backward. Case 46 was eccentric, Case 47 was *petite* almost to the point of being a dwarf, Case 50 was senile, and Case 51 suffered from cardio-vascular disease. It may be that these people, barely able to adjust themselves to their environment when all goes smoothly, cannot do so at all in the face of a cataclysm. This will be discussed later.

Other cases of similar emotional origin have been seen, but since they did not fall within the time limits fixed here, they are not recorded. Sometimes the shock is catastrophic, at other times it is less severe.

Discussion.

The cases of delirium generally occurred in older subjects (average age 56) than those of acute confusion (average age 44), and three-quarters of the former died but all the latter recovered completely. Delirium has indeed been recognized as a sign of impending death from classical times—

> Quos vult deus perdere prius dementat
> (Those whom the god wishes to destroy he first turns mad)

and in Shakespeare's day, as in the well known description of Falstaff's death (*King Henry V*, II, iii, 14):

> "For after I saw him fumble with the sheets, and play with flowers, and smile upon his fingers' ends, I knew there was but one way; for his nose was as sharp as a pen, and a' babbled of green fields."

In this respect it is to be classed not only with picking at the bedclothes and the Hippocratic facies, but also with Cheyne-Stokes breathing, pulsus alternans, and the death-rattle of pulmonary oedema.

The occurrence of acute confusional insanity following a sudden emotional shock was first reported by Lemos (1928). The insanity followed the news that her god-father's house had been destroyed by bombs in a revolution, and it is indeed to be expected that the condition would be more common amid the alarums and excursions of war than during the even tenor of peace. The first such English case was described by Parfitt (1932), and here the cause was a sudden family quarrel. The only English text-book giving emotional shock as a possible cause appears to be Ewen's (1933), and there it is simply listed with other hypothetical factors.

It may well be asked how it is that such diverse happenings as organic illness and sudden emotional shock can give rise to the same clinical picture of mental disorder. For answer we must examine the confused patient. He is in a helpless condition, unable to indicate his wants, needing to be dressed, washed, fed by tube, and attended to in all ways. His habits are faulty. In fact he is as helpless as a baby. It is evident that those habits that have been so fully formed by frequent repetition over the years that they have become second nature to him, have suddenly left him.

Now if we can produce a similar condition in the experimental animal by the same means, we shall be in a position to account for the matter. Such experiments have been performed by Pavlov (1927). He took puppies and painstakingly built up complicated systems of conditioned reflexes. Unless extinguished by special methods not germane to our present argument, these persisted intact except in two eventualities: they were all suddenly and completely lost if the animal fell sick or if he was involved in a sudden catastrophe, e.g. when the kennels were flooded (*loc. cit.*, pp. 313 and 397). The condition of the animals was then much as in our cases.

In later experiments Pavlov (1941) succeeded in producing experimental psychoses. These appear to correspond most nearly to states of delirium and confusion. The animals showed chaotic conditioned reflexes and recovered with three days' rest. Moreover he was unable to cause these psychoses at all in well-balanced individuals, although they appeared readily in castrates, strong unbalanced excitatory and weak inhibitory types. This is strikingly like the acutely confused psychotics (Cases 44–51) above, who all had abnormal personalities.

Another question arising out of the present investigation is whether the attack commonly recurs. The local population is a relatively stationary one and the opportunities for history-taking are exceptionally good. Nevertheless, except for

the indefinite history of two previous nervous breakdowns in Case 46, in only one patient (Case 11) could a definite earlier attack of acute confusion or delirium be traced, and here search of the hospital records revealed the following:

A single woman, aged 25, a staymaker, was admitted on March 10, 1903. She was said to have been well until her intended wedding day, four days previously. It was then discovered that her betrothed was already married. She became excited and took no food, although her sleep remained good. On admission she was dishevelled, excited, incoherent, and exhausted. A week later she was much better, but still sulky and querulous. In May she expressed the delusion that charges were made against her. The next month she was brighter, and, after a month's trial, she was discharged recovered on July 11. She was probably not pregnant.

The next attack, due to a thyroid growth and recorded above on p. 762, did not occur until after 36 years, in which she had remained well.

Conclusions.

1. From the mental point of view severely confused patients all show a similar clinical picture although there are differences in detail; aetiologically, however, they fall into two classes: (*a*) acute confusion, which is of emotional, and (*b*) delirium, which is of physical origin.
2. The condition is a definite clinical entity and includes acute delirious mania, which does not merit a separate class.
3. Uncomplicated cases of acute confusion usually recover within a few weeks.
4. Delirium more often occurs in older patients and is of grave prognostic import, most cases dying within a few weeks.
5. Most subjects who develop acute confusion are of eccentric, dull, or unusual personality.
6. Both acute confusion and delirium are of similar mechanism, being due to a massive loss of conditioned reflexes, and are analogous to the similar states that Pavlov produced in dogs.
7. Recurrence of this psychosis is rare.

I thank Dr. T. Wishart Davidson, Medical Superintendent of the Leicester City Mental Hospital, for permission to publish these cases.

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