EMERGENCIES IN GENERAL PRACTICE

ACUTE DELIRIOUS STATES

BY

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In former days delirium was relatively common as a complication of almost any severe systemic infection. It is seen less often now, probably because so many infections are quickly brought under control by sulphonamides and antibiotics, and because intemperance, in Great Britain at least, is less widespread. With an ageing population, however, there is a continuing incidence of delirious reaction in old people to such stresses as infections, operations, and removal from home to the unfamiliar surroundings of hospital.

When delirium does occur in general practice the management of the case may be difficult; this is because the patient's restlessness and fear may make a full physical examination difficult or impossible, and the physician may be obliged to treat the symptom of delirium without being able to locate the underlying cause. It is a common error for delirium due to fulminating cerebrospinal meningitis to be mistaken for an acute psychosis and diagnosed as, for example, schizophrenia, with resultant delay in treatment. The sudden appearance of delirium in a previously stable person is most alarming to the relatives, who are apt to fear that permanent insanity has come on, so that ability to diagnose a transient and benign condition will be of comfort to the family.

Genuine delirium is always symptomatic of some organic impairment of the function of the brain, hence one must search below the complex of symptoms for the causal process, which may be a generalized toxic factor acting on the brain from some remote focus or some diffuse disease actually in the brain. Focal lesions of the brain that are not raising the intracranial pressure do not usually cause delirium, though localized lesions in the region of the third ventricle and mid-brain do cause delirium in such conditions as Wernicke's encephalopathy.

Conditions Associated with Delirium

A vast number of illnesses can be complicated by delirium, for example:

(1) *Systemic infections* such as severe respiratory infections (especially apical pneumonia in children), septicaemia, pyaemia, erysipelas, typhoid fever, bacillary dysentery, infective hepatitis, smallpox, and, in children, most of the exanthemata.

(2) *Inflammatory conditions of the central nervous system* such as tuberculous and cerebrospinal meningitis, polioencephalitis, cerebral abscess, meningovascular syphilis, Sydenham's chorea (especially chorea of pregnancy), and cerebral malaria.

(3) *Other lesions of the brain* such as concussion, cerebral contusion (traumatic delirium), diffuse neoplastic deposits whether primary or secondary, raised intracranial pressure, haemorrhage, thrombosis, embolism, hypertensive encephalopathy, senile and presenile cortical atrophy, and idiopathic and symptomatic epilepsy.

(4) *Chemical poisons* such as barbiturates, bromides, amphetamine, hyoscine, atropine (whether taken internally or absorbed from the conjunctiva), cocaine, and cannabis indica (hashish,

marihuana); alcohol may be noted here, though it is believed to cause delirium by interference with the absorption of the vitamin-B complex.

(5) *Cerebral anaemia* due to severe anaemias, haemorrhage, heart failure, and coal-gas poisoning (in the last condition the delirium is seen during the stage of recovery).

(6) *Metabolic and endocrine diseases* such as uraemia, liver failure from various causes, ketosis, hyperemesis gravidarum, deficiency of vitamin-B complex, acute porphyria, hyperinsulinism, thyrotoxicosis, and hypopituitarism.

(7) *Sudden deprivation of drugs* such as barbiturates, cocaine, and alcohol. Abstinence deliria of this type are seen usually in addicts who are suddenly cut off from their source of supply by admission to hospital or prison; the delirium may be inaugurated or punctuated by one or more major epileptic fits which need not worsen the prognosis.

(8) *Physical strain*, such as exhaustion, dehydration, and exposure to extreme heat and cold, probably does not cause delirium unless it is complicated by an infection or by avitaminosis.

(9) *Acute psychoses* such as acute mania, acute melancholia, and acute schizophrenia may rarely show the features of a true delirium; if they do, it is because of complicating factors such as infection, avitaminosis, brain injury, or alcohol. On the other hand, the so-called "psychogenic delirium" is not a true delirium; it occurs in hysterical personalities as a reaction to personal stress, and the patient, usually a young woman, is much more responsive to her environment than is a truly delirious patient.

Although the above list is a formidable one it is not exhaustive. Fortunately, in most cases there is no great difficulty in finding the cause of a delirium, because the complication usually comes on after the underlying disease is well established and it is easy to see that the delirious symptoms are secondary. It is of practical importance to remember that there may be several causal factors at work in the same patient and that it may be difficult to assess the relative importance of each factor; for instance, one patient may exhibit epilepsy, alcoholism, head injury, infection, inanition, and avitaminosis.

The degree of delirium varies according to the patient's constitutional make-up, and according to the dose of the noxious agent. Many practitioners will know of patients who are so susceptible that they become delirious from the toxæmia of a common cold or of a furuncle. The immature brain of the child and the damaged brain of the senile, arteriosclerotic, alcoholic, epileptic, or concussed patient are less tolerant of deliriant agents than is the brain of the healthy temperate adult.

Pathological Basis of Delirium

Toxaemia and pyrexia are traditionally believed to be the causes of delirium, but other factors of importance are acute deprivation of vitamins, anoxaemia, and exhaustion from insomnia. There is no close relation between the morbid anatomical changes in the brain and the amount of delirium: thus widespread tuberculous meningitis is compatible with clear consciousness, whilst no pathological changes need be found in a severe case of drug delirium. In Wernicke's encephalopathy it has been shown that there are congestion and small haemorrhages in the grey matter of the brain stem and hypothalamic region, with special involvement of the mammillary bodies.

Symptoms and Signs of Delirium

Apart from the physical signs of the causal disease there may be no physical signs in delirium, but slurring of speech, slowness and unsteadiness of limb movements, tremor, nystagmus, tachycardia, pyrexia, and coated tongue are often seen.

The mental signs consist of a varying degree of clouding of the mind. In the prodromal stage, which may be absent, the patient is unable to relax and feels vaguely restless; noise and bright lights irritate him; he complains of headache and sleeps fitfully. In a mild case of delirium the premonitory signs are succeeded after a few hours or a day or so by the patient's inability to grasp what is going on around him; he becomes muddled in his mind and he has a reduced awareness of the significance of happenings in his own mind and body and of happenings in his environment. This mild clouding of consciousness will be familiar to many who have had severe toxic illnesses or who have been given a large dose of a drug such as hyoscine. In these mild cases the patient may be able to complain of and to describe his symptoms though he does not fully appreciate them. The registration of new impressions is impaired and so is the recall of old impressions, hence the memory is faulty.

In acute delirious states the patient's awareness is much more reduced; he may be unable to realize that he is ill, and that he is in his own bed at home; his awareness of the passage of time will be impaired so that he may believe it is day when it is night; he may misidentify those in attendance on him. In such cases we say he is disorientated for place and time. The memory for immediate and recent events is much disturbed and the memory for remote events is patchy.

It is difficult to secure the patient's attention for more than a fleeting moment; he is at once distracted by moving objects, by shadows, and by noises, and all these he may mistake for hostile agencies. To such illusions, and also to visual and auditory hallucinations (perceptions that have no external objective reality), he may react by flight or aggression. Thus, to avoid the animals that seem to crawl over him, he may dive through a window, or, to defend himself from the leering and threatening faces that he sees around him, he may strike out at his nurse. Apart from these purposive acts he usually shows generalized restlessness and seems unable to lie quietly at ease.

His thinking is disconnected and so his utterances are frequently incoherent. He is often suggestible and may be persuaded to read from a blank page or to describe insects or animals on a virgin counterpane. The patient's mood is often unpleasurable and may vary from mild unease to frank terror; but there may be euphoria and a feeling of well-being, which often alternate with anxiety. It may be difficult to keep the patient in bed because of his varying mood.

It is typical of delirium that the symptoms fluctuate quite quickly, so that short periods of lucidity may for a few minutes relieve the mental clouding. This may occasion some embarrassment if the attendants have been indiscreet enough to prognosticate gloomily in the patient's hearing.

The patient's talk and actions may be concerned with his daily tasks (occupational delirium). Thus the bus conductor calls for fares and hands out imaginary tickets and change. Sometimes the talk is of some real source of worry, and the relatives may conclude that this is the cause of the delirium when in fact it contributes only the content of the delirium.

Most delirious states become more florid as darkness falls; this is familiar to those caring for old people and for patients who have had operations on the eye. In such cases it is particularly desirable to nurse the patient in an evenly lit room, whilst the practice of leaving one eye unbandaged after eye operations probably helps to prevent delirious reactions.

Sleep is usually much disturbed and the tendency is for the patient to drowse uneasily by day and to become restless and wakeful as night comes on. In some deliria, however, there is marked restlessness by day and by night, and this may be most resistant to hypnotics. As a rule, when the patient does pass into a natural sleep it is a sign that the delirium is almost over. But in fatal cases the patient becomes more inaccessible and subsides into a low muttering delirium with fluttering movements of the small joints: coma then appears.

After recovery from delirium the patient's memory of the delirious period is patchy, vague, dreamlike, or quite absent, and it is rarely wise to enlighten him. As his utterances in the clouded state may have described likes and dislikes he would ordinarily wish concealed, the patient may sometimes have an uncomfortable time explaining the content of the delirium to an inquisitive spouse.

Diagnosis

The diagnosis of acute delirium is easy and only the acute excitement of mania or schizophrenia will be misleading, but except where these are complicated by some organic toxæmia, as sometimes occurs in puerperal illnesses, they do not show true clouding of consciousness and the patient's awareness of his surroundings is usually intact. Because the presence of delirium is usually a sign of some underlying organic illness it is wiser to favour the diagnosis of organic delirium and look for a physical cause than to accept too lightly a diagnosis of one of the functional psychoses.

The diagnosis of the underlying cause of the delirium will often be most difficult and sometimes impossible. A careful history and physical examination, with examination of the urine, will serve to rule out the majority of causal conditions, but sometimes no history is available and the patient is so restless that no full examination can be made. In baffling cases the blood urea, blood sugar, and cerebrospinal fluid should be examined. Where no assessment of the cause can be made the only course is to treat the delirium symptomatically and wait expectantly for more conclusive signs.

When there is no obvious physical disease one should have a thought for deliriant drugs, especially in those professional patients who have access to drugs. During the physical examination note will have been taken of any hypodermic puncture marks, which in cocaine addicts are often inflamed or septic. Slurring of speech and ataxia are common in drug deliria, whilst a bromide skin eruption may point to the diagnosis. Pupillary abnormalities may be helpful. In psychopathic night-workers amphetamine is a common drug of addiction, and it is often used by barbiturate addicts to combat drowsiness; it can cause delirium, but a transient paranoid psychosis is equally common.

It must always be remembered that the patient whose breath smells of alcohol may yet be delirious from a head injury or following a major or minor epileptic fit. Nowadays multiple means of suicide are the mode, and the ingestion of alcohol and sundry barbiturates may precede the inhalation of coal-gas.

The skull should be examined for injury and for healed scars sustained following epileptic seizures in the past. A primary cancer in an accessible site may suggest secondary deposits in the brain.

Prognosis

The prognosis of the delirium will generally be the prognosis of the underlying cause, but in an old or debilitated person delirium may be fatal from exhaustion leading to heart failure, whilst accidental death may follow if the patient plunges through a window in trying to escape his imaginary enemies. When delirium betokens grave interference with the oxygenation of the brain the prognosis is gloomy; the commonest cause of this type is heart failure;

a rare cause is at work when poliomyelitis affects the respiratory muscles and leads to anoxaemia which gives rise to delirium.

Although the brain changes in delirium are usually functional, reversible, and short-lived, it sometimes happens that the morbid changes in the neurones are severe and persistent. In such cases persistent clouding of consciousness may lead to a picture of dementia with grossly impaired memory. This is not rare after delirium tremens and bromide deliria, when a Korsakov-like psychosis may be evident for months or years.

The duration of most deliria ranges from an hour or two to a week or two.

Prophylaxis

The judicious use of antibiotics and chemotherapy lessens the incidence of deliria accompanying toxic and infective illnesses. Post-operative deliria are unusual now that less toxic anaesthetic agents are in use and now that blood loss is quickly made up by blood transfusions.

If an old person with a respiratory or other infection can be nursed at home the risk of a toxic delirium is reduced; in hospital the old person, in addition to coping with his infection, has to adapt himself to different hours of sleeping and eating, and to strange faces and stranger procedures; in such old people mild clouding of consciousness may become acute if they cannot be cajoled into taking adequate food and fluids, and such persuasions are more readily accepted from known and trusted relatives. However, the advantages of skilled nursing must be weighed against the disadvantages of strange surroundings.

The prolonged administration of bromide mixtures should be avoided, especially in old people.

Treatment

The specific treatment of delirium is the treatment of the underlying physical illness.

The need for hospitalization must be decided for the individual case; unless ample and skilled nursing is available it is usually best for acute and severe deliria to be treated in the psychiatric wards of a general hospital. After the acute emergency has been dealt with there will often be a clamant need for psychiatric assessment and treatment of suicidal cases, drug addiction, alcoholism, and senile psychoses.

The patient's strength should be maintained by a nourishing diet, and dehydration should be combated by ample fluids; the blandishments of a sympathetic nurse or relative will usually overcome the patient's suspicion or fear, but if food, fluids, or medicines are refused then spoon-feeding or tube-feeding may be needed. The bowels should be regulated by salines. If there is any reason to suspect a failing heart it will be worth giving digoxin, 0.25 mg., three times a day by mouth. If there is any reason to think that avitaminosis is a causal factor, as it is in delirium tremens, then nicotinamide, 50 mg. four-hourly, and thiamine, 15 mg. daily, should be injected intramuscularly for three to four days.

The nursing attendants should change as rarely as possible; there should be no visitors and the room should be quiet and evenly lit. The restless patient must never be left unwatched, and if he is likely to come to harm he should be nursed in a cot with the side padded with pillows, or even on a mattress on the floor.

In a condition that may be of toxic origin it is obviously undesirable to add any toxic agents, but the physician may be in the dilemma of having to choose between watching the patient exhaust his strength by restlessness and sedating him with some drug that may increase the toxic state. Generally, it will be better to give sedatives, but these should, so far as is possible, be restricted to the night-time and be given in really effective doses. If the delirium is due to barbiturates or other hypnotics it is best to accept the patient's restlessness

and allow elimination to proceed. Otherwise, the safest drug is paraldehyde: this may be given by mouth diluted in four times its volume of milk or water, or in capsules; the dose should be 1 to 4 dr. (3.5–14 ml.) of paraldehyde, depending on the patient's physical state. If he will not swallow and no stomach-tube is at hand, 5–10 ml. may be injected intramuscularly; the sterilized injectio paraldehydi (*National Formulary*, 1955) can be used. Not more than 5 ml. should be injected at the one site. In emaciated people injection should be avoided if possible, because if paraldehyde is deposited subcutaneously, instead of intramuscularly, there is a risk of necrosis of tissues.

Morphine and hyoscine are best eschewed; the former may cause retention of urine and the latter may act as a deliriant. If they are the only drugs at hand a single injection subcutaneously of morphine, 1/6 gr. (11 mg.), together with hyoscine hydrobromide, 1/150 gr. (0.43 mg.), may be permitted. Morphine will, of course, be avoided if there is respiratory disease causing cyanosis and excess secretion in the lungs.

In desperate cases where sleep must be procured, the patient can be controlled by an adequate number of helpers while thiopentone is injected intravenously. The individual reaction to barbiturates varies widely, and if the delirium has been caused by barbiturates the addition of more by the intravenous route would probably paralyse the already depressed vital centres in the medulla. Provided these facts are borne in mind, thiopentone can be of the greatest value and can transform the situation in a matter of minutes. From 3 to 7 ml. of 5% thiopentone solution should be injected at the rate of 1 ml. a minute and only enough should be given to bring on sleep: the airway into the lungs must be kept clear. This measure should be used only in dire emergencies and only to procure sleep for an hour or so while the patient is being transported to hospital, while additional nursing assistance is being obtained, or while such urgent manipulations as lumbar puncture are being carried out.

In delirium due to bromide intoxication, sodium chloride, 150 gr. (10 g.) daily by mouth, will lead to more rapid elimination of the bromide though the delirium may not fully resolve at once.

Although it will only be used by the expert psychiatrist, mention must be made of the fact that one or two electric convulsion treatments can dispel deliria that have been resistant to all other measures; perhaps their usefulness is best seen in delirium associated with epilepsy, where the delirium is the equivalent of an epileptic fit, and in the sub-acute delirious state that sometimes persists after an acute bromide delirium has subsided.

Conclusion

Delirious symptoms are the mental symptoms, often conspicuous, of some physical condition that may otherwise be inconspicuous.

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