GENERAL MEDICAL ASPECTS OF CONFUSIONAL STATES IN ELDERLY PEOPLE*

BY

P. D. BEDFORD, M.D., M.R.C.P.*Consultant Physician, the Cowley Road Hospital, Oxford*

Mental confusion has been defined as "a condition in which those notions persons ordinarily have of their relations with time and space and of their own personalities become less clear, perhaps to such a degree that the patients, though conscious, no longer recognize their surroundings or realize their own identity. Associated with this inhibition of the action of high psychic centres there may be a removal of restraint upon lower and more automatic ones, so that agitation, excitement, and hallucinations take the place of orderly conduct, equable affective tone, and true perceptions" (Macnamara, 1933). Implicit in this, and in any acceptable definition of mental confusion, are tenuity of contact with reality, and clouding of the patient's awareness of his own personal identity and of himself in relation to his environment.

A Misuse of Words

Mental confusion is to be clearly distinguished from dementia, and to equate the two is at best a misuse of words and their meaning. The fact that dementia and mental confusion may be seen together in the same person is fortuitous, not obligatory; a demented patient is not necessarily confused, nor is a confused individual by any means necessarily demented. It is most unfortunate that the two terms are so often used synonymously; and this is particularly so in dealing with old people. For dementia, and especially when qualified by the adjective "senile," carries a connotation of hopeless and irreversible mental dissolution, of itself unjustified, but to be condemned in the strongest possible terms when extended to include confusional states, whether qualified as "senile" or not. This inexcusable practice is due not only to woolly definitions but also, and more importantly, because of ignorance concerning the mental changes normally to be expected in old age and inseparable from the process of normal senescence.

Senile Dementia

With advancing years everyone undergoes a mental as well as a physical decrescence, and in old age people are less than they were in almost all respects—in range of interests, memory, intellect, emotional control, etc. In that they are old people, and have suffered a "deterioration in total personality and mentality," they may, by strict definition, be diagnosed "senile dementia." But to diagnose the majority of elderly people as demented on this score is nonsense and humiliating, misleading, and hurtful. Psychiatrists have long recognized that in practice no sharp line can be drawn between senile dementia on the one hand and the normal mentality in old age on the other: the one

merges imperceptibly with the other, and the diagnosis is made on social rather than on psychological grounds. Broadly, if the aged individual adequately fits into his customary surroundings he is usually, and rightly, considered to be "normal."

It is a well-recognized fact, however (which should not prejudice the foregoing), that many old people who are quite acceptable, and accepted, in their accustomed surroundings can nevertheless be shown to have a considerable degree of dementia. The elderly lady of good social and financial standing who is forgetful of names and unaware possibly even of the time of day is known to us all. By deeply ingrained habit and training she produces the appropriate phrase or action automatically, and maintains herself quite adequately in her environment provided that no unusual or excessive demands are made upon her. Ordinarily, medical advice is not sought for such people because they present no problem (unless an accident such as a fire caused by forgetfulness or a petty misdemeanour of similar cause puts them "beyond the pale"). Such persons are commonly to be found in all strata of society and throughout the whole community, living at home and accepted without question by their families and friends. But, seen for the first time by someone who is not accustomed to their foibles and peculiarities, they could well be labelled "senile demented." If by this diagnosis it is implied that they should properly be housed in an asylum, nothing could be further from the truth, for such persons can continue indefinitely, harmoniously and appropriately, within their own accustomed environment.

Mental Confusion: A Different Picture

But how different is the picture in mental confusion: for now the whole equilibrium is shattered. A behavioural disorder, such as restlessness, nocturnal wandering, and incontinence of urine or of faeces, destroys the environmental balance (much more certainly than hallucinations and delusions), and medical attention is urgently sought. But what is diagnosed is "senile dementia"—in this context an irrelevant and valueless description applicable to almost any old person, entailing the sinister implication of a hopeless and irreversible mental disease for which immediate (and permanent) admission to a mental hospital is requested and expected. The root cause of the crisis is not adequately sought, for the meretricious diagnosis will solve the immediate problem. It is not sufficiently appreciated that the confusional state is probably quite transitory, and that, if its precipitating cause is found and can be remedied (or when it has spontaneously ceased to be effective), the patient will probably revert, quite rapidly or within a reasonably short time, to her former state, in which, let it be remembered, "demented" though she may have been, she was living at home, or elsewhere, in reasonable harmony and equilibrium with her customary surroundings.

These pathetic cases are very common and justify three injunctions: first, to study the natural history of mental ageing; second, to appreciate that confusional states in elderly people are potentially reversible and usually of good prognosis; and, third, to act accordingly until time proves us wrong.

I have laboured this point because I believe it to be the fundamental reason for the otherwise inexplicable attitude of so many competent and well-intentioned

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physicians and surgeons to many elderly patients. For, granted the belief that a case is hopeless, a shrug of the shoulders and a prescription for hypnotics become less incomprehensible; "the old dog has had his day," and the problem resolves itself into how best to dispose of the mental corpse.

I would strongly urge that no elderly patient should be admitted to a mental hospital as a case of "senile confusion" or "senile dementia" without prior investigation by an interested physician in a general hospital or in the acute wards of a geriatric unit fully equipped to deal with such problems. I do not deny—indeed, the contrary is the case—that the mental hospital should play an important part in the short- and long-term management of psychiatrically disordered old people; but it is my firm belief, based on a knowledge of not a few of them, that most mental hospitals in this country to-day are burdened with large numbers of old people who—whatever the original reason for their admission—should properly not be there at all. Elderly patients should occupy mental hospital beds only when they are likely to respond to specialized psychiatric treatment, or when severe and persistent behaviour disorder makes mental hospital nursing and management imperative. This is not an unattainable ideal but quite a practicable objective, as experience in Oxford has demonstrated (Cosin *et al.*, 1957).

The magnitude of the problem of confusional states in elderly people is shown by the fact that no less than 80% (4,000) of the 5,000 patients aged 65 or more who were admitted in the past eight years to the Oxford Geriatric Unit were mentally confused, whatever their salient diagnosis or other clinical condition. (It should be noted that the acute Geriatric Unit at Cowley Road Hospital in Oxford is a general medical establishment for the diagnosis, treatment, and subsequent disposal of elderly patients: admissions are largely unselected except on the grounds of age, and over 85% come direct from home. It is not a psychiatric institution as such; and there is no reason to suppose that the very high incidence recorded here of mental confusion in general illness in old age is in any way peculiar to Oxford.)

A Common Complication of Disease

Mental confusion is so commonly seen as a complication of so many and such a wide variety of diseases in elderly patients as to be regarded in practice as virtually a "normal" accompaniment of any illness in old age, whether psychiatric or somatic and however remote from the brain the primary disturbance may be.

It follows that "senile confusion" must be regarded, not as a diagnosis (a disease *sui generis*) but only (like cough or abdominal pain) as a symptom, which demands elucidation before a diagnosis can properly be made.

It is pertinent to inquire why mental confusion is so often a concomitant of disease in old people, and why, although not rare at any time of life, it is so very much more common in old age.

The following are some of the reasons:

1. The human brain is extremely vulnerable to anoxia (Courville, 1939; Hoff *et al.*, 1945; Corday *et al.*, 1953) because cerebral metabolism is completely dependent for its energy reactions on the aerobic combustion of glucose (Himwich, 1951). It is probably more sensitive to oxygen

deprivation than is any other organ or tissue in the body (with the possible exception of the liver), and so is the first to be affected—and subsequently the most severely—by hypoxia, however incurred.

2. The supply of oxygen to the brain is dependent upon the state of the heart, the lungs, the blood, and the blood vessels; the composition of the respiratory gases; and the integrity of such homeostatic mechanisms as the sino-aortic and spinal baroreceptor reflexes (Heymans, 1950; Heymans and Delaunois, 1951; Heymans and Heuvel-Heymans, 1951).

3. Disordered cerebral function is probably more readily apparent, either subjectively or objectively, than a similar degree of functional impairment in any other organ in the body.

4. Although opinions differ about the true relationship between mind and brain, and although many psychopathological states occur in the absence of structural cerebral abnormality, few would maintain that derangements of cerebral cellular metabolism, entailing as they do disturbance of function of the cells of the brain, will not also adversely influence the functions of the mind.

Cerebral cellular metabolism, as well as being wholly reliant upon oxygen and glucose for its energy reactions, is also dependent upon a supply correct in amount and proportion of electrolytes, including sodium, potassium, calcium, hydrogen, and phosphorus, and of substances including water, amino-acids, fats, glucose, enzymes and co-enzymes, and vitamins: all these in turn are dependent upon the state of the liver and of the kidneys, the endocrine glands, the intestines, and the amount and composition of the diet (Danowski and Elkinton, 1951; Holley and Carlson, 1955; Bedford, 1957a).

Thus each and every one of the organs and systems of the body is directly concerned in cerebral cellular metabolism, and a disturbance of function of any may lead to adverse cerebral and mental effects.

Factors Explaining Mental Confusion in the Elderly

The foregoing considerations apply to young and old alike and go some way to explain why mental confusion may be a complication of disease at any time of life. Some additional factors which explain its excessive frequency in the elderly are the following (they are some of the many direct consequences of senescence):

1. The cerebral circulation tends to become impaired in old age, and the brain is therefore more vulnerable in the elderly to the effects of anoxia (Himwich, 1951) and of disease in other systems (Bedford, 1956a, 1956b, 1957b).

2. In old age, derangement of function of all organs occurs more readily because their "reserve" is lowered as a result of tissue and cellular ageing effects and of the damage done by previous disease.

3. With advancing years, episodes of illness, especially infections of the respiratory and urinary tracts, tend to occur with increasing frequency, each episode carrying the hazard of cerebral metabolic or structural disturbance and mental confusion.

It is therefore not surprising that the brain in old age is a sensitive "indicator" of disordered function anywhere in the body, and that mental confusional states are so commonly seen in geriatric practice. These reasons also explain why mental confusion is a non-specific symptom in the sense that the same picture may be produced by widely different aetiological factors: thus it has been impossible to relate any particular

pattern of mental confusion to its organic cause; for infections, heart failure, uraemia, etc., may produce precisely similar mental reactions.

In discussing the somatic—that is, physical or structural—aspects of mental confusion, the importance of the adverse psychological effects of ageing in the aetiology of mental confusional states must not be minimized. Failing vision and defective hearing, tinnitus and giddiness, limitation of physical activity, the death of relatives and friends, increasing loneliness and diminished contact with society—all these conduce to a highly precarious mental state hovering on the brink of confusion. The extreme vulnerability of a mind in this state to further insult—both psychic and somatic alike—cannot be overemphasized.

Diagnostic Approach

The diagnostic approach to confusional states in elderly people should be governed entirely by the principle that “senile confusion” means no more than that “this old person is ill.” It implies that a worthwhile history is unlikely to be forthcoming and that he or she may present some difficulties in management for a while—but no more than that. The fact that a great many well-adjusted elderly people show some degree of mental impairment should be kept constantly in mind lest the automatic label of “senile dementia” be allowed unduly to influence the issue.

Diagnosis, then, embraces virtually the whole of medicine—general and psychological, and including surgery and gynaecology—and demands the exercise of no more peculiarly specialized skills than does paediatrics (of the same order and for very similar reasons). Precisely the same rules apply, but it will perhaps bear repetition that in elderly patients multiple diagnoses are the rule rather than the exception and that evidence of disease in one system by no means precludes the fact that another is at fault. A taxonomical guide to the diagnosis of confusion in elderly people has been given elsewhere (Bedford, 1954).

Management and Prognosis

In every phase of management it is important to bear in mind that confusional states (as distinct from dementia) in the elderly are potentially reversible once the cause, or causes, has been remedied or has otherwise ceased to be effective. This is shown by the fact that in my series of cases the mental confusion lasted for less than one month in all but 18%, and for more than six months in less than 6%.

The prognosis of confusional states in the elderly with regard to life is essentially that of its cause; and as regards mental recovery is not (perhaps surprisingly) materially affected by the degree of pre-existing mental impairment except in extreme cases. The high mortality rate in my confused patients (33% of them dying within a month after the date of their admission to hospital) is no different from that of the patients who were not confused, and simply reflects the gravity of severe illness in general in old age (Bedford and Caird, 1956); (many cases were admitted in a terminal condition).

In the large majority of cases the confusional state was transient, and the patient recovered within a week

or two (and in a few cases immediately) once the cause had subsided. Recovery, however, was sometimes considerably delayed, and on occasion persistent or incomplete (as is seen in cases of head injury). This is not surprising when one reflects how much is entailed in an elderly patient's rehabilitation after a period of confusion in hospital. For rehabilitation involves a great deal of readjustment. New things, new faces, and new surroundings are seen and must be recognized, memorized, and assessed. Old and once familiar objects must be given their former perspective. Bodily weakness must be overcome and the ability to walk again may demand a long and arduous programme of physical retraining. These adjustments—rapid and automatic in young people—have often to be regained slowly, painfully, and step by step in old age. For old people have everything against them; their ability to learn is slow, while structural cerebral vascular change militates against the ready impress of new engrammata implicit in learning (Welford, 1950; Himwich, 1951; Bedford, 1954). Physical frailty is a further handicap; and it is small wonder, therefore, that recovery after confusional states in the elderly may be slow and sometimes incomplete. On the contrary, it is rather surprising that recovery ever does take place—let alone so frequently, so rapidly, or so completely.

These fortunate outcomes, however, are only rarely spontaneous: they demand the application of the utmost vigilance and energetic treatment during every phase of the care and management of a mentally confused old person. The attitude of all concerned must be one of enthusiasm and cautious optimism: there is no justification for diagnostic or therapeutic nihilism. Any opinion implying that a patient is “too old for . . .” whatever would otherwise be indicated—either diagnostic or therapeutic—must be neither offered nor accepted without very close critical analysis. For what purports to be a reasoned and knowledgeable opinion is all too often in fact just an *ex cathedra* affirmation of an intuitive belief, emotionally charged, ill-informed, and often mistaken. Such misconceptions, however well intentioned, are no longer admissible in the light of the great improvements attainable to-day in the prognosis of diseases in old age.

Summary and Conclusions

“Dementia” and “mental confusion” are entirely distinct clinical entities. Serious errors in dealing with old people arise by confusing these terms, and from insufficient knowledge of the “natural history” of normal senescence.

Mental confusion is an extremely common complication of any disease in old people. This is because the many adverse consequences of old age itself—structural, functional, psychological, and environmental—enhance the extreme vulnerability of the brain at any age to hypoxia, biochemical derangements, and the effects of disordered function in other systems.

“Senile confusion” is not a diagnosis but only a symptom of almost any disease within the whole field of medicine.

The prognosis in senile confusional states is that of its cause as regards life; and as regards mental recovery very hopeful except in extremely demented cases.

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To-day's Drugs

With the help of expert contributors we publish below notes on a selection of drugs in current use.

Badional Gel (Farbenfabriken Bayer (F.B.A. Pharmaceuticals)).—This contains 10% *p*-aminobenzene sulphonylthiourea—that is, an equimolecular compound of sulphanilamide and thiourea. It is in a neutral gel, and is intended for application to infected wounds and burns and to areas of skin attacked by various kinds of bacterial infection. The film spread over the affected area dries and takes the place of a dressing as well as exerting an antibacterial action.

Urea has some antiseptic action, and has been used in the past for the local treatment of sepsis. Later there was a vogue for using mixtures of urea and sulphonamides in a similar way, and this preparation is a variant of that method, the two elements being combined in a single chemical compound. Advantages which have been claimed for it are greater activity against streptococci and staphylococci than that of sulphonamides alone, activity in the presence of sulphonamide inhibitors, and bactericidal as distinct from bacteriostatic action. On the other hand it is less active than some sulphonamides against Gram-negative organisms, and, like them, affected by the density of the bacterial population.

There is not yet enough published evidence to assess the therapeutic qualities of this preparation in relation to those of many others, including preparations of antibiotics.

N.H.S. basic price.—20-g. tube, 3s. 6d.

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The management of confusional states in elderly people calls for the closest collaboration between general hospital, mental institution, and geriatric unit, each playing its respective part; and demands that nothing of possible benefit, having regard to all the advances made in medicine in recent years, be denied to the old on the grounds of their age alone.

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Correspondence

Because of heavy pressure on our space, correspondents are asked to keep their letters short.

Tobacco Amblyopia

SIR,—We would like to make some corrections and additions to your annotation on tobacco amblyopia (*Journal*, June 20, p. 1582). Your statement that “there is no record, however, of cigarette smoking causing the disease” is certainly not true. Traquair¹ reported that this condition may, on rare occasions, occur in heavy cigarette smokers, and Schepens² found during the second world war that undernourished Belgians quite commonly developed severe tobacco amblyopia even if they smoked fewer than 25 cigarettes a day. You further state that “in rare cases amblyopia may occur from ingestion of alcoholic drinks in large quantities but without the smoking of pipe tobacco.” In support of this view you quote only the case presented by Quatermass,³ but you failed to indicate that this particular patient smoked ten cigarettes a day. We have also seen two cases of tobacco amblyopia in cigarette smokers: both patients were female and used to heavy drinking. We therefore consider that your annotation would have been more accurate if it had stated that tobacco amblyopia is rare in cigarette smokers but when it does occur some additional factor such as malnutrition or excessive consumption of alcohol is usually present.

The results of our study of 14 male patients with tobacco amblyopia seen at the Bristol Eye Hospital clearly showed that an essential feature was a low vitamin B₁₂ concentration in the serum.⁴ Other clinical manifestations of vitamin B₁₂ deficiency may be absent because, in pipe smokers and heavy cigarette smokers, the amblyopia may precede the onset of anaemia, glossitis, neurological involvement, or megaloblastic bone marrow by months or even years. We also presented evidence that tobacco amblyopia and the retrobulbar neuritis of Addisonian pernicious anaemia may be one and the same condition. In persons with even mild vitamin B₁₂ deficiency, as may occur in the “pre-pernicious anaemia” state, malabsorption syndromes, or in “vegans” with a dietary deficiency of vitamin B₁₂, the retina or the optic nerve is unduly sensitive to tobacco.

Finally, you write that “the main treatment is complete withdrawal of tobacco” and “the administration of vitamin-B complex may be of value in speeding recovery.” In our clinical trial the effect of parenteral vitamin B₁₂ (cyanocobalamin) in improving visual acuity and completely reversing the changes in the visual field was most encouraging, even if the use of tobacco was continued.—We are, etc.,

Institute of Ophthalmology,
London.

Torbay Hospital,
Torquay.

St. Margaret's Hospital,
Swindon.

J. M. HEATON.

A. J. A. MCCORMICK.

A. G. FREEMAN.

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