Discussion

Dr Scott (*Kingston-upon-Thames*): Could you tell us anything about the Coombs test in relation to methyldopa?

Dr Wollner: The Coombs test is positive in a small number of cases, thus giving an indication of haemolytic anaemia due to methyldopa. The question is whether to carry out routine Coombs tests on these patients; if the result is positive, do you discontinue the drug? One should look for clinical evidence of haemolytic anaemia, and having found it perform a Coombs test to establish the diagnosis.

Dr Brocklehurst (*Bromley*): Blood pressure is also related to the degree of distension of the bladder; as the bladder is distended so the blood pressure rises and when this distension is relieved the blood pressure falls. This contributes to a type of hypotension called micturition syncope, not uncommon in old people who get up in the night, when they get the effect not only of posture but also of emptying their bladder. Both of these things are likely to contribute towards hypotensive attacks, possibly resulting in falls.

Dr Wollner: It is the rapid changes in bladder filling or emptying which count, but the syndrome of micturition syncope has undoubtedly been well established and is probably an important cause of hypotension in the elderly.

Dr Batten (*Edenbridge*): Would Dr Wollner agree that after 40, if one feels in good health and has no symptoms, it is a mistake to have one's blood pressure measured? Will this make for health and happiness or the reverse?

Dr Wollner: This raises the whole question of the value of screening and for those of us who are over 40 this is a very interesting point. I believe in screening because I believe in prevention of disease and disability where practicable. I think the time will come when we will have regular screening examinations including blood-pressure measurement, and that there will be an indication, with even safer hypotensive therapy, for treating early rises in blood pressure in those people at special risk. Evidence is accumulating that a rise in blood pressure is one of the important risk factors in atherogenic vascular disease. But what do we do today? It would be a good thing for general practitioners to take the blood pressure of elderly and middle-aged patients routinely, thus being able to consider treatment when it reaches a certain level.

Mental aspects of cerebrovascular disease

Dr Klaus Bergmann, M.B., Ch.B., D.P.M. (*consultant psychiatrist*)

"A man is as old as his arteries" is a commonly accepted saying both by laymen and physicians. Rothschild (1956) in reviewing the history of senile mental changes and the views expressed in the first systematic textbooks of psychiatry in the nineteenth century points out that "it is evident that the whole subject was in a state of confusion, the term 'senile psychosis' still included atherosclerotic conditions and senile dementias without any distinction". Mayer, Gross, Slater and Roth (1960) are able to sum up a more clearly defined clinical picture of arteriosclerotic psychosis, but point out that distinctions have been drawn between conditions attributed to hypertension and those with related cerebral arteriosclerosis with or without hypertension (Krapf 1936). Furthermore this author distinguished between hypertensive and arteriosclerotic mental illness. Describing the former he said they took the form of twilight states of acute onset and sudden in termination, being wholly reversible and attributable to cerebral spasm. However,

Pickering (1951) pointed out that spasm is not likely to be a potent agent in the thin-walled cerebral arteries and suggested that occlusion, haemorrhage, arteriolar necrosis and embolism were likely to be of importance and that continuation of such states would lead, in a step-wise fashion, to a picture of dementia.

Arteriosclerotic dementia gives a characteristic clinical picture, usually beginning in the sixties and in about half the cases the symptoms make their appearance after one or more often several cerebrovascular accidents. Presentation may frequently be due to an acute confusional state and the antecedent history may contain such events as recurrent hypertensive crises, transient hemiplegias, blackouts or even symptomatic epilepsy, in 15–20 per cent of cases. The presence of impairment of recent memory and emotional changes being noted in all cases.

The general personality may be well preserved and the patients often show good insight into their disabilities. Depression, therefore, is not uncommon as reaction to these events. The course of the illness, though ultimately downhill, shows a tendency to take a step-wise course rather than a steadily progressive one and there may be long intervals of lucidity and preservation of personality and intellect.

It would be worth examining the more recent clinical evidence which justifies the differentiation of this syndrome and the diagnostic label of arteriosclerotic psychosis being given.

Roth *et al.* (1952, 1955) examining the population of a mental hospital compared the aged patients admitted with regard to several criteria, those of mortality and discharge at six months and two years.

Table I shows that senile and arteriosclerotic psychoses have different short term prognosis, that of the arteriosclerotic psychosis being the better, though at two years the difference is no longer very marked. Rothschild (1941) has suggested that more cases are incorrectly placed into the arteriosclerotic group than into the senile one and points out that mistakes are made due to the widespread, but incorrect, belief that hypertension and sclerosis of the peripheral arteries point exclusively to an arteriosclerotic psychosis.

TABLE I
TABLE ADAPTED FROM ROTH (1955)

	Senile psychosis		*A/S psychosis*	
	6/12	24/12	6/12	24/12
Dead	*59.1*	*81.6*	*33.2*	*72.8*
Discharged ..	*10.9*	*7.9*	*22.2*	*13.6*
Inpatient ..	*30.0*	*10.5*	*44.6*	*13.6*

Corsellis (1962) examined at autopsy 300 patients who died in a psychiatric hospital, distinguishing by accepted clinical standards those patients with organic brain syndrome and sub-dividing them into various groups. Among those clinically defined were vascular, senile and mixed vascular senile states. He found that arteriosclerotic brain damage tended to be equally distributed between males and females whereas both the other groups tended to show a predominance of female patients. Those cases clinically presumed to be vascular moved more frequently in and out of hospital than the ones diagnosed as senile dementia which, once admitted, stayed almost always until their death. The mean age on admission in the vascular group was 67 years compared to 72 years for that of the senile group. Focal neurological signs occurred more frequently in the vascular group, 60 per cent of cases as against 25 per cent in the other two groups. Convulsions occurred in 16 per cent of the vascular group as against nine per cent in the others and hypertension in more than 70 per cent of the vascular group and only 25 per cent of the senile group, the mixed group being intermediate with an incidence of 50 per cent.

Pathological changes in the large vessels were common in four fifths of all patients, however those patients in the vascular group showed the most marked changes. Focal destruction of cerebral tissue was most common in those diagnosed in life as arteriosclerotic psychosis (72 per cent) and small vessel degenerative changes tended to be associated with those found in larger vessels.

TABLE II
GENERAL CONDITIONS

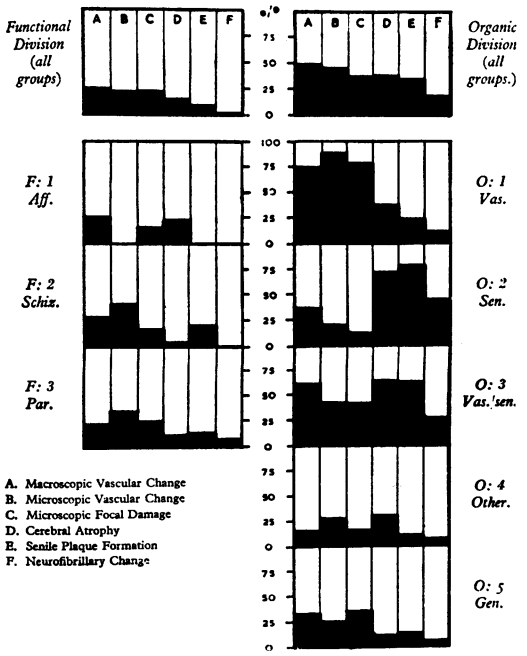

Table II shows the most important findings graphically. It demonstrates that though pathological changes of a vascular or degenerative type occur in all groups of elderly patients, quantitative assessment of types of damage affecting the brain can establish the relationship between the group clinically described as vascular and evidence of macroscopic and microscopic vascular change and focal cerebral damage. Conversely, the predominance of degenerative changes, cerebral atrophy, senile plaque formation and neurofibrillary changes are demonstrated for the senile group.

Corsellis sums up his findings as follows—"Thus all these findings support the general conclusion that the common forms of cerebral degeneration are demonstrated according to a well-defined and demonstrable pattern".

Blessed *et al.* (1968) in a prospective study assessed patients clinically and performed a neuropathological examination of the brains of those who died. A diagnosis of arteriosclerotic dementia was made in those cases with a history of stroke, with localized neurological signs plus any one of the following items; hypertension, variability of course, epileptic fits, preservation of insight and emotional incontinence.

They found that 55 per cent of cases were diagnosed as arteriosclerotic dementia but this was only confirmed in 20 per cent of cases though mixed pathology was present in a further 25 per cent.

If patients were scored for each clinical above (max. score = 7) the means for the following groups were:

I. Pure degenerative (senile dementia) = 1.45 items
II. Mixed = 2.7 items
III. Vascular = 4.38 items

The cases were therefore rediagnosed using a more stringent set of criteria i.e. arteriosclerotic dementia was only scored if the patient had a history of strokes, localizing neurological signs and two of the other above items and improved the number of correct diagnoses (vascular and mixed) to 78 per cent. They also confirmed the differentiating importance of age and sex that had already been pointed out by Corsellis, though his mixed group resembled the degenerative cases while theirs was closer to the vascular ones.

The case for considering arteriosclerotic psychosis as a valid clinical entity has been convincingly established, but examinations of hospital populations cannot give a true picture of the prevalence, as artefacts such as the relative provision of geriatric and

psychogeriatric beds and the policy with regard to admissions may well determine the number of patients with this disorder to be found in institutions of various types, ranging from psychiatric units to welfare homes. Kay *et al.* (1964) carried out a random sample survey of respondents over 65 living in their own homes. The diagnosis of arteriosclerotic psychosis was made in the presence of impairment of memory and intellect found in subjects who gave a history of a stroke or of recurrent epileptiform seizures or confusional episodes or those with focal signs of cerebrovascular disease. Their findings are summarized on the following table III. Arteriosclerotic mental disorder represents

TABLE III

PREVALENCE RATES PER CENT OF CASES WITH PSYCHIATRIC DISORDER AMONG SUBJECTS LIVING AT HOME

	Males (*N*=115)	*Females* (*N*=194)	*Total* (*N*=309)
1. Organic brain syndromes:			
Severe	6.1	4.1	4.9
Mild	6.1 | 12.2±3.0	4.6 | 8.8±2.0	5.2 | 10.0±1.7
(*a*) Senile:			
Severe	0.0	2.1	1.3
Mild	2.6 | 2.6	3.1 | 5.2	2.9 | 4.2
(*b*) Arteriosclerotic:			
Severe	5.2	1.0	2.6
Mild	3.5 | 8.7	0.0 | 1.0	1.3 | 3.9
(*c*) Other:			
Severe	0.9	1.0	1.0
Mild	0.0 | 0.9	1.5 | 2.6	1.0 | 1.9
2. Functional disorders	25.2±4.1	34.0±3.4	30.7±2.6
(*a*) Schizophrenia, chronic	0.9	1.0	1.0
Late paraphrenia	0.0 | 0.9	0.0 | 2.6	0.0 | 1.9
Paranoid states	0.0	1.5	1.0
(*b*) Affective disorders and neuroses:			
Moderate/severe	12.2	8.8	10.0
Mild	8.7 | 20.9	20.6 | 29.4	16.2 | 26.2
(*c*) Other	3.5	2.1	2.6
3. All disorders	37.4±4.5	42.8±3.6	40.7±2.8

N.B.—The symbol ± indicates the standard error.

less than half of the total prevalence of organic brain syndrome found within the community. This finding would tend to justify the previous work which has suggested that artiosclerotic psychosis is an over-diagnosed condition. Furthermore, at least some of the cases in this survey have the properties that are described both by Corsellis (1962) as mixed vascular and senile psychoses showing the clinical course and features associated with degenerative rather than vascular disease. In this sample males predominate over females by nearly eight to one, unlike the study of Corsellis where they are about equal in number. Perhaps the explanation for this is that in a hospital population female arteriosclerotics tend to be selectively admitted as their male partners find it difficult or impossible to cope with them or are already dead, whereas the converse may apply for males affected by this disorder.

Table IV shows clearly the selectivity of admission that occurs with regard to arteriosclerotic dementia and suggests that the medical geriatric wards carry the greatest burden and perhaps even welfare homes carry a proportionately higher number than

do psychiatric hospitals. This finding agrees with common clinical experience.

TABLE IV

DISTRIBUTION OF CASES UNDER VARIOUS KINDS OF INSTITUTIONAL CARE ON 1 NOVEMBER 1960 AND PREVALENCE RATES PER 1,000 POPULATION AGED 65 OR OVER

	Number of cases under care				*Rates per 1,000*
	Mental hospitals	*Geriatric wards*	*Welfare homes*	*Total*	
Senile dementia	7	11	23	41	7.6
Arteriosclerotic dementia	4 >12	10 >24	6 >32	20 >68	
Other severe brain syndromes	1	3	3	7	
Manic-depressive disorder	6	0	0	6	0.7
Schizophrenia, chronic	?	0	2	2	
Paraphrenia of late onset	3 3	1 1	4 6	8 10	1.1
All psychoses	21	25	38	84	9.4
Brain syndromes, mild forms	0	20	28	48	5.3
Neuroses and allied disorders (moderate/severe forms)	0	9	8	17	
Character disorders, etc.	0 0	0 9	5 13	5 22	2.4
All disorders	21	54	78	154	17.1

The management of patients with arteriosclerotic psychosis can be considered under the following headings:

1. Physical health
2. The effect of brain damage
3. Associated emotional changes.

Physical health

There can be little doubt that the ischaemic brain is less able to withstand metabolic and toxic insults than the normal brain and even minor degrees of anaemia, congestive cardiac failure, silent respiratory or urinary infections, malnutrition and other metabolic upsets may have a disproportionate effect. In the absence of any obvious cerebrovascular accident accounting for a recent step-wise deterioration, a search for asymptomatic somatic illness should always be made as treatment may be most rewarding and deterioration be arrested.

The effects of brain damage

These are complex and can be considered under the following headings:

(a) *Memory loss.* This is most marked for recent events and with relative preservation for well-established past events. This may lead to dangers in the home with regard to open fires, cigarettes, electricity, gas taps and, outside the home, with regard to wandering abroad and a liability to injury with road traffic.

It is easier to prescribe the right environment than to find it available. Protected flatlets with central heating and without stairs, a quiet precinct and a warden in charge often allows disabled elderly to remain and cope with a familiar environment far longer than would otherwise be possible. Relatives taking on the care of the elderly who hesitate in restraining or placing limits on their once dominating parents may require support from the physician. A well staffed modern welfare home may frequently provide sufficient care, but where wandering is a severe problem, a home for the elderly

mentally infirm may be required. In my opinion memory defect of itself should never be an indication for admission to a psychiatric unit.

(b) The reaction of the brain-damaged person to his environment follows recognizable patterns which, if understood, will help in the management of the patient. Goldstein (1930, 1942) pointed out the liability of patients with organic brain syndrome to 'catastrophic reactions'. These occur when the patient is exposed to situations with which he cannot cope, the patient may react with increasing tension, anger and tears while struggling to master the situation. It is the doctor's duty to assess disability carefully and to ensure that those attendants or relatives dealing with the patient do not make demands which are beyond his or her capacity. The patient himself may attempt to cope by the process described as 'organic orderliness' with restriction of his environment, rigid routines, an obsessional ordering of belongings and, in earlier phases, a tendency to make lists, to cover up forgetfulness and a withdrawal from any new situation or personal contact. If this is understood as an attempt to adapt and is supported rather than derided it may well help the patient to cope for a little longer with an environment that has become more difficult and frightening.

(c) *Epilepsy.* Fine (1966) has described the occurrence of epileptiform attacks followed in the postictal phase by exacerbation of the stroke and severe confusional episodes and he points out that these are amenable to treatment and that 'epanutin' in small doses is remarkably effective though he suggests that treatment with phenobarbitone should be avoided in these cases as it is liable to increase the confusion.

Emotional reactions

In a small proportion of patients (five to ten per cent) vascular brain-damage may be associated with a depressive psychosis. More frequently there is a depressive reaction that can be understood with regard to the stress under which the patient lives and the preservation of his insight. The previous personality of the patient is also of importance. The obsessional, insecure person whose *raison d'etre* has been hard work, achievement and the esteem of others may well feel markedly guilty as well as depressed. In general it has been said that in the presence of brain damage the person becomes himself, only more so! External restraints are less binding, aggression, suspicion, hostility and sometimes sexuality may be expressed in unacceptable ways, which may necessitate psychiatric assessment and sometimes outpatient or inpatient care. Tranquillizers and antidepressants have a place in the treatment of these reactions, but care has to be taken as hypotensive side-effects, common with antidepressants and phenothiazines, may well aggravate the effect of cerebral ischaemia. Hypochondriacal symptoms are also commonly found and can be seen in two ways; first, as an attempt to assert power and to prove one's ability to influence both relatives and physicians, complete rejection of the patient will often lead to even greater exertions and, secondly, as an attempt to communicate symptoms of an underlying organic disease which cannot be described in a clear or rational way. Generally among patients who have bilateral upper motor neurone lesions, excessive emotional lability may be especially marked.

It may seem that the arguments put forward have been an academic exercise not dissimilar to mediaeval disputations concerning how many angels could be balanced on the point of a needle. However, even at the present time, it is of great help to the families that care for their relatives to be able to give a clear prognostic guide and an understanding and explanation of the events to be expected during this illness. In future, vascular surgery on one hand and increasing understanding of brain chemistry on the other may make the distinction vital.

Acknowledgements

Dr D. W. K. Kay and the editor of the British Journal of Psychiatry for permission to reproduce their tables.

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Discussion

Dr Irvine: What is the rôle of the mental hospital in the inpatient care of patients with the syndrome just described?

Dr Bergmann: Dr Irvine, speaking as a geriatric physician, is on the other side of the fence and has to bear a much greater burden than we do. The rôle of the mental hospital is in a state of flux, but perhaps our main rôle is with the associated severe behaviour disturbances, severe emotional reactions in the mildly or moderately impaired patients who do not need nursing and are not bedridden. It is important to distinguish between the arteriosclerotic and the senile psychotic, because of long static periods that may be found in the former group. Where dementia is minimal and depression is maximal, I have given ECT with great success, although sometimes in fear and trembling.

Dr Rao (*Dulwich*): Is there not a significant amount of metabolic psychosis in the aged?

Dr Bergmann: I agree that metabolic insults, for a variety of reasons, aggravate arteriosclerotic psychosis.

Dr Wollner: An attempt at defining the various causes of dementia is academically important, but I would like to ask the speaker whether he feels that we have as yet sufficient evidence to differentiate these groups on clinical grounds. Some of the examples given almost make it appear that the clinical criteria were made to fit a simple classification between the groups rather than to find evidence for it. Would he perhaps agree that at this moment it would be better to confine our diagnosis to organic brain disease or organic state, look for all possible causes for this and treat whatever is treatable.

Dr Bergmann: No! But Dr Wollner obviously has a point. The prospective studies that were done and the work of Roth in 1955 tested the concepts of unitary organic psychosis in old age, which at that time included depression and schizophrenia, and there were men like Dr Wollner who said, 'It's all part of the same thing but we'll treat the dominant symptom as best we can'. I think there can be little argument that functional psychoses of old age have now been clearly separated off. This is mainly due to the advent of antidepressant drugs and of ECT and the very different outcomes of treatment. There is a great deal of important work going on at the moment regarding RNA metabolism and vitamin B_{12} deficiency, particular attention being paid to the degenerative brain disorders of the senile dementia group. I agree that this work is not conclusive but it may be that in the next generation a great deal of light will be thrown on this subject and that differentiation will become important and far more specific.

Dr Wollner: Is the speaker including under senile dementia the affective disorders, or do we mean by dementia the conditions associated with organic brain disease?