

MEDICAL PRACTICE

Contemporary Themes

Brain failure in private and public life*

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I suspect that there is one matter on which all human beings would agree, whatever their racial, religious, or political beliefs: that so long as life is desirable we must strive and succeed in keeping our brains at a high level of excellence of performance. In our professional lives as doctors we are often reminded how precarious this achievement is. We see the demented; the mentally defective; the psychotic; the depressed; the addict; the hallucinated; the hemiplegic, perhaps with a language disturbance; or organically or psychiatrically ill patients with space-time disorientation. It is difficult to know into which or how many of these diagnostic groups we should classify the politician who regularly shows defective judgment, heart failure, stroke, alcoholism, psychopathy; the religious or political fanatic, who may also be a head of state; the public figure who has furthered his ends by corruption; or the maintainers of outmoded dogmas who have the power to inflict misery on countless millions of life hours. Socially we may be aware of the troublemaker, the neurotically indecisive personality, again the alcoholic, the unscrupulous, or the "drop out." The situation is clearest of all in ourselves, when we are at a loss for an idea, a word, or a name.

An unavoidable and increasing problem

Of the many reasons for concentrating on the subject of brain failure the first is the most delicate—the personal reason. If we succeed in giving up drinking, smoking, and eating butter; keeping slim; avoiding a sluggish bowel; wearing a seat belt and crash helmet; reacting only homeostatically to the news of plutonium in the

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laundry or a locked car in one's parking space; and if we thereby avoid cancer, coronaries, strokes, traffic accidents, and suicide, we are all bound to decline into one of the most terrible of all medical fates—brain failure.

Secondly, as wealth, knowledge, and techniques increase, so the span of life increases, and populations freed from smallpox, malaria, schistosomiasis, kwashiorkor, and starvation also increase. Since it may be within the capabilities of world policy to ensure enough food for all, the medical profession is already ensuring the production of greater and greater numbers of cases of brain failure.

Thirdly, men and women become more powerful in human affairs as they grow older. Though they may grow wiser with experience up to a great age, powers of intellect, and especially of insight, eventually fail. Then people are positively dangerous in proportion to the powers they wield and to the rate of progression and degree of damage before the problem is detected. The most frightening state occurs when brain failure is detected but concealed for reasons of policy and power.

Categories of brain failure

Many neurologists try and carry in their heads a standard list of causes of dementia (rather than of brain failure). This list is always growing (see table). An approach that takes a wider view of brain failure might make us better able to predict and prevent the onset of many of the listed conditions. We might start by considering general medical disorders, trauma, aging and abiotrophy, endocrine states of over- or under-action, the effects of drugs (including alcohol, nicotine) and other biochemical poisons, and deficient or toxic trace elements and by taking a positive interest in diet, alimentary and excretory mechanisms, water and soil chemistry, genetics, and epidemiology.

On to the list of conditions should be grafted neurosis, depression, psychopathy, manipulation of medical powers towards gain or escaping justice, and psychosis (especially the schizoaffective disorders, which seem to strike so viciously in the "corridors of power").

SYMPTOMS AND SIGNS OF BRAIN FAILURE

For the neurologist there are certain ominous intermittent symptoms of brain failure. These include vague feelings of uncertainty and instability, transient loss of concentration, occasional odd behaviour,

Standard list of causes of dementia

Cerebrovascular disease	Neurosyphilis
General vascular disease	Inherited disease
Acute and chronic subdural haematoma	Rhesus incompatibility
Collagen diseases	Phenylketonuria
Arteritis: giant-cell, syphilitic, tuberculous	Wilson's disease
Cerebral tumour	Down's disease
Intracerebral blood clot	Cerebromacular degeneration
Meningioma, neurofibroma, cerebellar haemangioblastoma, pituitary tumour, craniopharyngioma	Storage diseases
Glioma, ependymoma, pinealoma	Presenile dementias
Secondary tumours	Pick, Alzheimer, Huntington, Steele-Richardson, motor-neurone disease
Angioma	Hydrocephalus
Colloid cyst	Congenital, acquired, "normal pressure"
Trauma	Intoxications and deficiencies
Traffic, domestic, and industrial accidents; boxing; riding; surgery; war	Alcohol, drugs, complex molecules, elements
Demyelinating diseases	Dietary disorders and deficiencies
Multiple sclerosis, Schilder's disease	Malabsorption; starvation; vitamins B ₁ , niacin, B ₁₂ ; kwashiorkor
Bacterial infections	Excess or deficient endocrine secretion
Meningitis, abscess	Pituitary, thyroid, pancreas, suprenal
Viral infections	Radiation necrosis
Encephalitis: herpes simplex, Creutzfeldt-Jacob, kura	Miscellaneous
Tropical diseases	General medical diseases
Malaria, cysticercosis, trypanosomiasis	Age, abiotrophy
	Depression, schizophrenia

dimness of vision, limb weakness and numbness, inexplicable changes of mood, incompetence over familiar tasks, rather nebulous pains, and not feeling well or not enjoying life. Signs such as fits or incontinence are certain indications that all is not well. Since brain failure may carry with it lack of both insight and of memory, the patient may have no symptoms and seek advice only at the insistence of his relatives or employers.

The kind of symptom or sign that may be important, especially in public figures, includes lack of temporal recall (memory); lack of spatial recall; failing concentration; diminished language fluency; poverty of abstract thinking; failing powers of judgment, insight, and behaviour; diminished general knowledge and vocabulary; fewer personal interests; declining personal cleanliness, the release of primitive trends (often sexual, aggressive, or alcoholic); breakdown into psychotic states with paranoid delusions or hallucinations; severe depression with possible suicide.

DIAGNOSIS AND MANAGEMENT

The subject of diagnosis, on which management depends, may be formidable whatever kind of classification we use as a background. Nevertheless, the experienced doctor will be able to make out for himself or herself what is generally necessary up to the point where perhaps only special neurological investigations can take matters further. The explanation of brain failure may be found on a blood pressure, or temperature, pulse, respiration chart, a plain x-ray film, or in the bottle of drugs hidden on top of the lavatory cistern at the end of the ward: and especially in a laboratory report.

CAT SCANNING

Until very recently neurologists and neurosurgeons turned for diagnosis to ventriculography, carotid angiography, and the lumbar air encephalogram. Though these invasive tests proved their worth, they were painful and sometimes followed by severe deficits. Then the isotope scanner became available. Technetium-99m, with its half-life so conveniently of just over six hours, is still of great value, especially when computerised axial tomography (CAT) scanning is not available, though technetium brain scanning shows only what is there that should not be and does not show what is missing.

The immense value of CAT scanning is that it shows not only solid and cystic masses, such as tumours and clots, but also ventricular and sulcus-gyrus proportions, so that one can determine whether there is brain atrophy, which is one of the important features of brain failure, especially if it is prolonged. The use of CAT scanning is of great practical value in the management of head injuries; and it might also be used more widely in the study of multiple sclerosis. Now that nearly vertical views of the brain are becoming available we have undoubtedly the greatest investigational advance in neurology that any of us has

yet seen. If head scanning is combined with whole-body scanning the relation of brain states to general bodily states might become more rapidly and more effectively demonstrable.

Prevention better than rehabilitation

We cannot finally conquer brain failure, for at every moment entropy is eroding our very substance. As aging, trauma, wear and tear, radiations, abrasions, abiotrophy, differential absorption and excretion by all our organs work on us all the time, we can for a while—for a lifetime—manage to restore the losses in our molecular structure and function. But the battle is eventually lost. Nevertheless, it is a task worthy of the intelligence, arts, and science of medicine to postpone those inroads of decay, to hold back for a while the time when every particle in the universe is neither giving nor receiving energy. Our everyday practice of medicine is manifestly to maintain life by processes of measuring what is normal and acceptable to us, and correcting what is not.

It is a valid criticism of medicine and especially neurologists that we act mostly as repairers rather than preventers. In brain failure (and its frequent consequence, dementia) we rehabilitate rather than prevent. We regard preventive medicine and epidemiology mainly as the task of others. But why do we patch up patients with multiple sclerosis in relapse and hope never to see them in remission, which is really the time to seek for the cause of the next relapse? Why are we preoccupied with myelin, damage to which must be the last stage of events in many nervous diseases? Why do we have no idea of the contents of the water we drink? Why did it come as a surprise that aluminium (and what else?) accumulated in the brains of patients treated with dialysis? Why are so many disabilities iatrogenic or pharmaceutical? Why has the neurologist the general reputation of being an accurate diagnostician of rare cases for which there is no treatment, when he is really a general physician who takes over when the going gets difficult?

I consider that there are hardly any primary nervous diseases (the few include some tumours, multiple sclerosis, Huntington's chorea, motor neurone disease). In most cases in neurological practice the nervous system is reflecting disorders of other systems. Because it is the principal instrument by which we discern our symptoms and describe them, it is almost always an intermediary and not a prime mover in disturbed functions.

We are still trained to be managers of established and inevitable disasters. Instead we should attempt, using the special skills and instruments outside the average run of medical practice, to turn our attention towards preventing or delaying diseases which still remain mysterious in their production of brain failure, and to promote that kind of focused research that brought us immunisation, antibiotics, and steroids.

Brain failure at its most dangerous

The point to which all that I have already said has been directed is brain failure in public life. Clearly large groups of people, millions perhaps, run the risk of having their lives directed by sufferers from brain failure. In medicine there are several ways of checking whether we are fit for our jobs; but in positions of highest power there are no such stringent precautions. The theme of grave illness affecting political figures has been brilliantly expounded in L'Etang's *The Pathology of Leadership*.¹ Public life and history are full of instances of seriously ill men taking most important decisions, when they were clinically in no fit state to do so. Chamberlain had bowel cancer when he went to pit his wits against Hitler. At the Yalta conference in 1945 the three leaders, Churchill, Roosevelt, and Stalin were all sick men, Roosevelt shortly to die.

Certain professions and trades have a statutory retirement age, perhaps to curb powers that may be impaired by the failing judgments and technical skills of later life. The privilege of never having to retire (and perhaps never to work either) may be seen in the Order of Precedence. What is so special about the royal, religious, judicial, martial, or political mind? What is there about what is left of the brains of princes of the realm and of the Church, great officers of the law, admirals of the fleet, field marshals, marshals of the Royal Air Force, statesmen, and politicians that those who contain such remarkable organs should never have to retire? Why should it be different for neurosurgeons, locomotive drivers, airline pilot captains, and income tax inspectors?

Enforced retirement

An age of retirement, of becoming an old age pensioner, must be directly related to some kind of anonymous, partly social, partly medical, assessment of many complex factors, though it is full of anomalies. For example, if women have a greater expectation of life than men, men should get their free bus passes at 60 while women soldier on until they are 65. As a profession we should try to devise the best rule for the age of retirement on the grounds that such an age is most properly determined by the actuarial likelihood of brain failure. We may well select 65 as the age of retirement, even though there are many instances of much longer durations of brain excellence individually. It may be wise that several brilliant surgeons lay down their scalpels at 65 so that one failing operator may be prevented from causing harm to an occasional patient.

If this is our decision then we must ask for its general application. We must go further and insist that there is regular and detailed medical surveillance of all those who take on themselves the tasks and powers of directing the lives of hundreds, thousands, millions. The House of Commons often keeps ridiculous hours for important decisions, which would not be acceptable to any other profession or trade. If the least lapse of a main-line locomotive driver results in his being relegated to office work or, at best, shunting, how much more important is proper medical scrutiny for, say, members of the Cabinet, of the Houses of Lords and Commons, board members of great corporations, High Court judges. The brains of every member of the Commons could be scanned in a month (using a single CAT scanner 12 hours a day, every day of the week). The medical profession should organise a campaign towards these ends on the same lines that have been used in campaigns against smoking and for the enforced use of crash helmets and seat belts. Such work, of conflict

and persuasion, would historically be similar to that which ended transportation, ensured clean water and adequate drainage, and brought women the vote and retirement pensions for the elderly (1906 in this country, 56 years earlier in France).

Politics of prevention

If we perceive a danger of brain failure lurking, in a hundred different causes, behind almost any illness, at almost any age, will any of us bring that recognition to wider notice? If we feel that retirement is rightly based on what has so far been a sub-conscious estimate of medical statistics the age of retirement must be applied as a rule without exceptions. Arising from the rule is the conclusion that up to the universal age of retirement the more important and powerful a post anybody has, in relation to the numbers of people he manages, the more stringent should his medical assessment be. The sole purpose of such examinations would be preventive and not punitive: for many of the causes of brain failure are treatable if detected in their early stages, and some of the causes are entirely avoidable.

References

- ¹ L'Etang, H, *The Pathology of Leadership*. London, Heinemann, 1969.

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Dying children need help too

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The control of symptoms in dying children is often sadly neglected. This neglect is reflected in a review of the case notes of two children who died of cystic fibrosis within three years of each other. The girls were under the care of the same consultant, who in the interval between the two cases was introduced to the concept of proper terminal care for children.

Child 1

This child was found to have cystic fibrosis at the age of 6 weeks, her parents having already had two affected children. Her sweat chloride concentration was 302 mmol (mEq) l. Her clinical course was typical of the disease. At the age of 9 years she was admitted after a week of increasing breathlessness and troublesome, productive cough. She was dyspnoeic, cyanosed, and feverish. Her chest signs and radiograph were characteristic of fibrocystic disease with added infection.

She was at once put into a humidified oxygen tent and encouraged to drink. Her maintenance antibiotics were changed and physiotherapy intensified. After admission her condition deteriorated, so fluids and antibiotics were given intravenously from the second day. She was

cyanosed and restless but conscious, orientated, and unable to sleep. On the sixth day she went into congestive cardiac failure, requiring frusemide and digoxin. During the six days she had been seen often but inconsistently by three senior house officers, two registrars, and two consultants—holidays and off-duty periods interfering with continuous care by any one doctor.

Active management continued, with numerous blood gas analyses and several changes in antibiotics, but staff were clearly slow to realise either that she needed relief for her symptoms or that this was a terminal illness.

On the seventh day the nursing notes repeatedly stated that she was "very poorly" and "has not slept." She had also complained of pain, for which paracetamol was given. At the child's request her special calorie and protein-rich diet was stopped. On this day, her mother left on top of the oxygen tent the sadly inappropriate gift of a painting book. The next day the child died. Her parents were not present. Throughout her illness they had made a few short visits. They had somehow eluded an interview with the medical staff.

Child 2

This girl also had siblings affected by cystic fibrosis. She was 19 months old before her sweat chloride was unequivocally raised to over 200 mmol/l despite a suggestive story of recurrent chest infections and diarrhoea. She was 7 years old at the time of her admission. Her recent history and clinical findings were similar to those in case 1.

On admission active treatment was started with humidified oxygen, intravenous fluids and antibiotics, bronchodilators and mucolytics, sodium cromoglycate, and physiotherapy. Occasional episodes of chest pain, dyspnoea, and panic after coughing were controlled with paracetamol and diazepam regularly by day.

On the 11th day clinical improvement began and the drip came down. She was mobilised and was beginning to enjoy toys, television,

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