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Factors affecting the Care of Patients with Malignant Hypertension

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Public expectations from medicine have changed radically as a result of the improvement in life expectancy over the past 50 years. People expect to live a happy and healthy life into the seventh or eighth decade. If they do not, a questioning eye is turned upon the factors responsible. One of the most important of these is the standard of the medical care offered in prevention or treatment of illness. A woman who is delivered of a defective child because she had rubella in the early months of pregnancy no longer considers this an act of God. She is more likely to blame her general practitioner or other aspects of community medical services for not ensuring that she was vaccinated before she became pregnant. The quality of medical care has become a lively issue.

Some doctors are both puzzled and hurt when the quality of medicine is questioned. They argue that medicine can do more today than it ever could in the past and the public should be grateful for its achievements. The public viewpoint is rather different. Triumphs of science and technology are celebrated for a short period and then assimilated into the general fabric of experience. If, as a result of failures by practitioners responsible, the full benefits of those past triumphs are not reaped, the public have a right to ask for remedial action. The quest for quality in medical care is a direct consequence of the greater efficacy of the treatment that can be offered.

It is difficult to measure the quality of medical care.

What to measure and how to measure it both present great problems. The medical care system is very complex. An adverse outcome may arise because of the failure of an individual practitioner or ancillary to do something that a normally competent person should have done. Alternatively, it may occur because of an organisational failure. The failure to vaccinate a young woman against rubella might occur because the doctor whom she consulted was unaware of the risks and benefits of the vaccine and failed to give appropriate advice. Or it might occur because there had been a mix-up by a clerk or computer operator who was preparing lists of women who had and had not been vaccinated in order to issue reminders. This is a comparatively simple example. The situation is much more complicated when considering the outcome of an illness that requires the intervention of several different specialties and literally dozens of individuals during an admission to hospital.

Morrell (1970) proposed five headings for assessing the quality of medical care. These are —

- (a) outcome;
- (b) process;
- (c) facilities;
- (d) accessibility;
- (e) acceptability.

Obviously the most important of these is outcome, but it is one of the most difficult about which to gather evidence. Most studies on the quality of care come down

to investigations of the processes that were used, most often by study of the written case records. To relate process to outcome it is usual, at present, to confine investigations of the quality of care to illnesses where there is an effective form of treatment for a serious disease. This article describes the application of such techniques to the problem of severe hypertension.

Malignant Hypertension

Malignant hypertension (papilloedema) and accelerated hypertension (retinal cotton-wool spots or haemorrhage) have a poor prognosis without treatment. About 90 per cent of patients with malignant hypertension will die in the first year if they are not treated, and about 70 per cent of those with accelerated hypertension will die during the same period. Survival of patients with malignant hypertension can be prolonged substantially by anti-hypertensive therapy.

The investigations reported here form part of a larger project to investigate the care and treatment of hypertensive patients, particularly those with malignant or accelerated hypertension. The information comes from three different studies.

1. This was an examination of the case records of patients dying in the Greater London area in 1974-76 whose death certificates mentioned malignant hypertension among the causes of death (Dollery *et al.*, 1976). By courtesy of the Office of Population Censuses and Surveys (Dr Adelstein) copies of the death certificates were made available and general practitioners and hospital doctors were asked to lend their records for information to be extracted from them. A total of 100 patients' deaths were investigated over a period of approximately two years. These patients were necessarily a biased sample because they all died.

2. This investigation was designed to provide comparative data on patients with malignant hypertension who had survived. The National Morbidity Study recorded diagnoses of the patients, between 1970 and 1973, in 71 general practices scattered throughout the UK. Among these practices there were 165 individuals in whom malignant hypertension was recorded as the diagnosis. With the help of the OPCS these practitioners were approached to request the extraction of information similar to that recorded in the study of mortality in London (Bulpitt *et al.*, 1979).

3. This was a randomised controlled trial carried out in the hypertension clinics at Hammersmith Hospital, the Radcliffe Infirmary in Oxford, and King's College Hospital in London to compare the information content of standard hospital records and computerised hospital records in the initial care of patients with hypertension (Dollery *et al.*, 1977). The computer records contained pre-printed tables for recording all the features that were held to be important in the history, examination and investigation of a hypertensive patient; the standard records were plain sheets of paper upon which the doctor could write anything he wished.

Diagnosis

The randomised controlled trial of computerised versus

standard records revealed striking under-recording of important clinical information. It also highlighted the difficulty of distinguishing between two states: (1) a definite record that the condition was *not* present; (2) no entry in the record. Thus, in the standard case records there was a positive record of past history of stroke in 0.7 per cent of patients and a negative record that there had not been a stroke in 19 per cent. There was no record of any sort in the other 80.3 per cent and it was thus impossible to know from the case notes whether or not the patient suffered a stroke. In the computer records there was a positive note that the patient had suffered a stroke in 0.7 per cent and a written record that there never had been a stroke in 98.6 per cent. As the patients were randomly allocated to the two sets of records it would appear in this instance that the heavy under-recording in the standard records was probably of negative information. For depression, however, 76 per cent of the standard records had no record of any sort, whereas only 2 per cent of the computer records had no record. Positive records for depression were present in 16 per cent of the standard records and 38 per cent of the computer records. In this case the probable explanation is that there had been roughly equal omission from the standard records of both positive and negative results. Thus, there were substantial omissions from the standard records in respect of diagnostic information that ought to be recorded about hypertensive patients in a specialised hypertension clinic. A similar under-recording has been described in the USA by Frohlich (1971) who investigated notes of hypertensive patients from various hospitals in Oklahoma City. There was a record, either positive or negative, concerning stroke in only 24 per cent.

The National Morbidity Study highlighted a similar problem over the diagnosis of malignant hypertension in general practice. We received details of 92 patients who were recorded as having a diagnosis of malignant hypertension; only 14 had a positive record of papilloedema and 10 had cotton-wool spots or haemorrhages but not papilloedema. The remainder were, roughly, equally divided between those who did not have the retinal features of malignant or accelerated hypertension (34) or had no retinal examination recorded (27). Seven of the patients were not hypertensive. It was interesting to note that none of the patients registered as having malignant hypertension on the National Morbidity Study had this diagnosis mentioned on the death certificate when they eventually died. No doubt the retinal features, if ever present, had long since receded and the past diagnosis was not judged important at the time of death.

Data of this sort inevitably engender a healthy scepticism about both clinical records and death certificates. They also identify a need for much greater precision in examination and recording information about comparatively simple, but important, features.

Treatment

Previous studies (Veterans Administration, 1967) have established that the prognosis of severe hypertension is improved by a reduction in blood pressure. Deaths from cerebral haemorrhage and infarction and from heart and renal failure are reduced to a greater extent than those

from myocardial infarction. A *prima facie* case for ineffective therapy would exist if a patient with severe hypertension, who was co-operating with treatment, died of cerebrovascular disease, especially cerebral haemorrhage, or of renal failure, and this would be reinforced if death followed a period of poor blood pressure control. No such case would exist if the patient was moribund at presentation or if he or she died of a myocardial infarction after a long period of relatively good blood pressure control.

A prominent feature of the patients with malignant hypertension who died in London was poor control of blood pressure. The overall average pressure throughout treatment was 189/117 mmHg. Twenty-two per cent had very bad control, with the average diastolic blood pressure on treatment exceeding 125 mmHg. Another worrying feature was the infrequency of blood pressure readings when the patients attended their general practitioner. The frequency of visits, about once a month, appeared appropriate for patients with poor blood pressure control. Unfortunately, a reading of blood pressure was recorded on only 38 per cent of these visits. There was considerable inter-doctor variability, the frequency of blood pressure records per visit ranging from zero to 75 per cent after the diagnosis of malignant hypertension had been made.

Treatment with hypotensive drugs was usually energetic during the last few weeks of the patients' lives but in the early stages it was often less so. Twenty-six per cent of patients who were followed for more than a few months were treated with low doses of only one or two hypotensive drugs. Nineteen per cent stopped treatment for a time. Only rarely could the reason be identified. Failure to re-start therapy after a period in hospital for surgery was the explanation in one case, the advice of a friend in another. Mental illness (depression, psychosis or alcoholism) was an important contributory factor in producing non-compliance with treatment. Another factor in the London series was the preponderance of possibly avoidable causes of death. Twenty-two per cent of those who died with true malignant hypertension had cerebral haemorrhage mentioned on their death certificates and 60 per cent renal failure. The average blood pressure of those dying of cerebral haemorrhage, 198/120 mmHg, was significantly higher than in all other patients combined.

The blood pressure control achieved in the malignant hypertensives involved in the National Morbidity Study was better, on average 180/109 mmHg, but still far from ideal. Of the 14 deaths from malignant hypertension 5 were from intracranial bleeding and 2 from renal failure.

Discussion

Malignant hypertension is becoming much less common, presumably as a result of widespread treatment of moderate hypertension, which prevents a progression to the accelerated phase. Once the patient enters the malignant phase the prognosis is still not very good (Breckenridge *et al.*, 1970). The mean survival time in the London study was only 25 months after diagnosis. In the National Morbidity Study 62 per cent of those with papilloedema or retinal cotton-wool spots were alive six

years after entry into the study.

In theory most cases of malignant hypertension should be preventable by effective case-finding programmes for patients with moderate or severe benign hypertension. If renal function is preserved at the time of diagnosis, life expectancy should be satisfactory provided that good blood pressure control is achieved. Unfortunately, many patients continue to present with appreciable renal failure. The average blood urea at presentation in the London study was 16.5 mmol/litre. Even if they retain their renal function, many have poor blood pressure control and eventually die of renal failure or cerebral haemorrhage. Some of these deaths are clearly preventable by more effective use of existing hypotensive agents and more punctilious follow-up. It is hard to defend a doctor who sees a patient with known malignant hypertension whose last recorded blood pressure was high and who either does not record a blood pressure reading on this visit or, if he does, leaves the dose of drugs unaltered. Patient factors and the social environment also played a large part and can only be incompletely documented from the clinical records. Could anything have been done to help patients who were persistently not adhering to therapeutic advice or who had mental illnesses that interfered with their ability to co-operate?

These data emphasise, once again, that hypertension is a chronic illness that requires attentive and skilful follow-up of the more severe cases. We hope that by focusing attention upon the need for more effective blood pressure control and better follow-up the number of people dying of malignant hypertension can be still further reduced.

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