

Key messages

- Poor cognitive performance has been associated with increased mortality in several studies of elderly people, but the underlying mechanisms are unclear
- In this prospective study of 921 elderly people cognitive impairment was a strong predictor of death from ischaemic stroke
- Low vitamin C intake and low plasma ascorbate concentrations were also important risk factors for death from stroke
- Cognitive performance was poorest in people with the lowest vitamin C status
- A high vitamin C intake may protect against both cognitive impairment and cerebrovascular disease

showed that intake of the antioxidant vitamin C was a strong predictor of subsequent death from stroke.⁸ This finding, together with the known link between atherosclerosis and cognitive impairment, suggests that subclinical deficiency of vitamin C may be a determinant rather than a consequence of impaired cognitive function in elderly people.

Declining cognitive function and cerebrovascular disease are both common in old people. The results of this study tend to support the view that a considerable proportion of cognitive decline in the elderly population is vascular in origin. They also suggest that a high vitamin C intake, perhaps by an antiatherogenic mechanism, protects against both cognitive impairment and cerebrovascular disease. This may have important implications for prevention.

We thank the Department of Health for allowing us to use data from the 1973-4 Department of Health and Social Security's nutritional survey. We are grateful to David Coggon and Clive Osmond of the MRC's environmental epidemiology unit for advice and to Paul Winter for help with

computing. The DHSS survey was coordinated by the late Professor A N Exton-Smith, and the biochemical analyses were carried out by Joan Stephen.

Funding: Department of Health/Medical Research Council Nutritional Programme.

Conflict of interest: None.

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(Accepted 1 November 1995)

Survey of neuroleptic prescribing in residents of nursing homes in Glasgow

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BMJ 1996;312:611-2

In the United States concern about the often excessive use of neuroleptics in residents of nursing homes in the 1980s¹ led to new legislation, which included guidelines on the use of these agents in nursing homes and also (uniquely) placed restrictions on physicians' prescribing of neuroleptics within nursing homes.

We measured the prevalence of neuroleptic prescribing in nursing homes in south Glasgow and assessed what effects the American legislation might have if it were applied here.

Patients, methods, and results

We visited 28 nursing homes in the south of Glasgow and examined the medicine dispensing sheets of all 909 residents. We identified those taking neuroleptics regularly and collected information on the drugs and dosages prescribed. We interviewed a senior member of nursing staff in each home to collect information on age, sex, psychiatric diagnosis, and why the drug was being used. We applied the guidelines of the American legislation to decide whether the drug was being used appropriately.

The guidelines state that the use of a neuroleptic is appropriate for (a) psychotic disorders and (b) organic mental syndromes associated with specific psychotic

and non-psychotic behaviours that present a danger to the resident or others or that interfere with the ability of families or staff to provide care for the resident. Behaviours for which neuroleptic treatment is considered inappropriate are wandering, poor self care, restlessness, impaired memory, anxiety, insomnia, unsociability, indifference to surroundings, fidgeting, nervousness, depression without psychosis, uncooperativeness, and agitation that is not dangerous. Neuroleptics should be prescribed for use as required only in appropriate conditions and for up to five days.

Table 1 shows the neuroleptic drugs prescribed. Of the 909 residents, 217 were taking neuroleptics regularly, of whom eight were taking more than one. Prescription of antipsychotic drugs was appropriate according to the American guidelines in only 27 (12%) of the residents. The 190 others had been prescribed the drugs for inappropriate reasons, most commonly for mild aggression and agitation, wandering, uncooperativeness, and insomnia.

Comment

Our finding that 24% of residents of nursing homes in south Glasgow were receiving regular antipsychotics is consistent with reported prevalences of 17%-30% in the United States before the legislation was passed. These high rates were the spur to introduce the legislation.

Most residents receiving neuroleptics in our study (88%) could be deemed to be receiving them inappropriately according to the American guidelines. Therefore implementing similar guidelines in Britain would affect the prescribing rate of these drugs in nursing homes. In addition, 4% of the residents taking anti-

Table 1—Prescription of regular neuroleptic treatment to 217 residents of nursing homes in Glasgow

	No of residents
Thioridazine:	
≤ 50 mg daily	124
> 50 mg daily	37
Chlorpromazine:	
≤ 50 mg daily	7
> 50 mg daily	13
Haloperidol:	
≤ 1 mg daily	18
> 1 mg daily	14
Other antipsychotics	14

psychotics were prescribed more than one anti-psychotic drug and over a third (78, 36%) were taking amounts equivalent to more than 50 mg thioridazine daily.

The number of patients being prescribed potentially inappropriate and large doses of neuroleptics gives us cause for concern. None of these drugs is without hazard, and long term use has problems, including an increased risk of fractured neck of femur,² increased constipation,³ and impaired cognitive function,⁴ as well as the more generally recognised problems of akathisia, drug induced parkinsonism, and tardive dyskinesia. Several neurotransmitter systems in elderly people are particularly susceptible to these drugs—for example, thioridazine is a particularly potent anticholinergic agent. The neuroleptic malignant syndrome is a potentially fatal reaction of all neuroleptics.

With the closure of large institutions and long stay hospital beds, residents of nursing homes are becoming a frailer and more dependent population, with a high incidence of coexistent illnesses and therefore an

increased susceptibility to the side effects of neuroleptics. In addition, several American studies have shown little, if any, deterioration in behaviour after cutting down or stopping these drugs.⁵ One large study showed that antipsychotics could be stopped in 45% of residents with dementia alone and in 25% of those with a psychiatric diagnosis.⁵

Funding: None.

Conflict of interest: None.

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(Accepted 8 November 1995)

Cases of euthanasia and assisted suicide reported to the public prosecutor in North Holland over 10 years

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BMJ 1996;312:612-3

Euthanasia and physician assisted suicide are still forbidden in the Netherlands and cases have to be reported to the public prosecutor as unnatural deaths. Doctors will not, however, be prosecuted if they have acted in accordance with the requirements for prudent practice.¹ Before the 1980s doctors never reported such cases, but the numbers of reported cases have increased since then, from 19 in 1984 to 1318 in 1993.¹ We wanted to gain insight into the characteristics of reported cases of euthanasia (including assisted suicide): which physicians perform it and with what kind of patients?

Methods and results

Data were collected from each reported case of euthanasia in the province of North Holland (2.3 million inhabitants) from 1984 to 1993. The source was reports compiled by the public prosecutor when a

doctor reported a case to the coroner or the police. These reports always included a doctor's report and a coroner's report and sometimes reports from the doctor who gave a second opinion, a living will, or a report by the Medical Inspectorate. Among others the following variables were registered: the doctor's specialty and the patient's sex, age, and diagnosis. Diagnoses were classified according to the International Classification of Diseases (ICD-9). We grouped the diseases on the basis of their occurrence among the reported cases of euthanasia.

From 1984 to 1993, 1707 cases of euthanasia were reported. The number of cases reported increased from 1 in 1984 to 426 in 1993. Most cases were reported by general practitioners (74%). Specialists and nursing home physicians reported fewer cases (22% and 3%). There were more male patients than female (57% v 43%). The average age was 62 years for men and 65 years for women (SD 15 years). Table 1 shows that 78% of the cases concerned patients with cancer and 9% patients with AIDS.

To compare the number of cases of euthanasia with the total number of deaths due to a specific disease, we derived data on the total number of deaths in North Holland per diagnosis per year from Statistics Netherlands. From 1984 to 1993, 0.82% of all deaths were due to reported cases of euthanasia (table 1). The percentage of cases of euthanasia was higher for patients with AIDS (13.41%), multiple sclerosis (5.35%), amyotrophic lateral sclerosis (4.08%), and cancer (2.26%). It was particularly low for patients with diseases of the circulatory system (0.05%).

Comment

This is the first study of this scope that provides insight into the characteristics of cases of euthanasia reported to the public prosecutor. One limitation is that it deals only with reported cases of euthanasia and therefore does not extend to the "dark numbers"—cases that were not reported. Nevertheless, our results may apply also to unreported cases since an earlier study found no differences in age, sex, and diagnosis between cases of euthanasia reported by general practitioners and those cases they did not report.²

The increase in the number of reported cases may be due to an increased willingness of patients to seek doctors' help with euthanasia, although earlier research suggests that at least part of the increase is due to doctors' increased willingness to report cases.²

Table 1—Diagnoses for reported cases of euthanasia and assisted suicide (n=1707) compared to diagnoses for all deaths (n=206 777) in North Holland 1984-93 (values are numbers and rounded percentages)

Diagnosis	All deaths	Euthanasia and assisted suicide	Cases of euthanasia and assisted suicide as percentage of all deaths (95% confidence interval)
Malignant neoplasms	58 629 (28)	1326 (78)	2.26 (2.14 to 2.38)
Diseases of the respiratory system	5351 (3)	31 (2)	0.58 (0.38 to 0.78)
Diseases of the circulatory system	85 530 (41)	41 (2)	0.05 (0.03 to 0.06)
Multiple Sclerosis	318	17 (1)	5.35 (3.14 to 8.42)
Amyotrophic Lateral Sclerosis	539	22 (1)	4.08 (2.57 to 6.11)
AIDS	1104 (1)	148 (9)	13.41 (11.4 to 15.4)
Other causes of death	55 306 (27)	117 (7)	0.21 (0.17 to 0.25)
Total	206 777 (100)	1702* (100)	0.82 (0.78 to 0.86)

*Five missing cases.