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The full potential of ultrasound

SIR,—When the problem of funding the National Health Service is debated it is surprising that so little attention has been paid to ultrasound.

The most expensive technological diagnostic advances have been computerised tomographic scanning and magnetic resonance imaging—both important, highly desirable, and impressive, yet neither has made much impact on the standard practices of a general hospital x ray department.

Ultrasound, on the other hand, is a small, mobile, inexpensive, and unimpressive machine, now seen in most (perhaps all) hospitals, not only in x ray departments but also in obstetric, paediatric, cardiac, and doubtless other clinics or wards and operated not only by radiologists. At perhaps one tenth of the price of a computed tomography scanner, at a mere fraction of the service and running costs, and plugged into a standard 13 amp socket, it offers no competition whatsoever in terms of status. Yet, for many reasons, it has more to offer, and should by now have revolutionised investigatory practices.

Clinical ultrasound requires no unpleasant preparations or injections and is safe. The cost of an investigation is the time of the operator and the price of one, two, or occasionally three 40p films. It is absolutely operator dependent, and for this reason should be, except for echocardiography, entirely the preserve of the x ray department, where radiologists can acquire the necessary skill to offer a definitive diagnosis, usually based on a single investigation. Credence given to wrong diagnoses made by inexperienced or inexpert operators will inevitably result in the facility falling into disrepute.

Unlike computed tomography and magnetic resonance imaging, an ultrasound examination is done in real time and since the probes are hand-

held a lesion or a search for a lesion can be viewed from an infinite number of angles and positions. Consequently, what amounts to a rapid bloodless laparotomy or laparoscopy can be done accurately by operators who have a knowledge of anatomy, pathology, surgery, medicine, and gynaecology.

If the full potential of ultrasound is to be exploited it is necessary to break with certain aspects of traditional radiography and provide a service for all disciplines, including general practitioners, which offers, wherever possible, a definitive diagnosis based on a single investigation, as in a laparotomy or other surgical exploration, with no recourse to computed tomography or other investigations. Such indications would include diseases of the liver, biliary tree, pancreas, spleen, genitourinary system, and pelvic viscera; intra-abdominal tumours; abscesses; trauma; pyloric stenosis; intussusception; and congenital dislocation of the hip. Ultrasound should also be used as a rapid preliminary screen for patients undergoing barium enema and barium meal and follow through examinations and intravenous urography since, despite bowel gas being a hindrance, it is often possible to identify tumours of the bowel or Crohn's disease or some other expected or unexpected lesion and thus either avoid doing an unnecessary investigation or modify it in some way.

What I propose has been achieved at this hospital, where we enjoy the full confidence of the clinical staff, who will treat or operate on the basis of a single examination diagnosis. There can be little doubt that the savings in terms of radiographic equipment and materials, bed occupancy, theatre time, nursing, and so on, are considerable. Translated nationwide . . . ?

With such obvious advantages, one would

have expected the profession to have embraced ultrasound and implanted it in the very front line of medical practice—but not so. The lobby in both the National Health Service and the private sector is so powerful that there is every indication that computed tomography requests will soon make it almost a routine investigation, while ultrasound will be relegated to the second and third division—and that will be a great opportunity missed.

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Late life depression: undertreated?

SIR,—Dr Bob Baldwin's admirable leading article (20 February, p 519) hits a welcome note of optimism about both response to physical treatment and prognosis in late life depression. It remains clear, however, that many elderly depressed patients fail to respond to initial attempts at treatment.¹

Pharmacological strategies for resistant depression² may be poorly tolerated in the elderly. Several open and controlled clinical trials in depressed non-elderly adults suggest that the addition of lithium in cases where the response to tricyclic antidepressants is poor is successful in 50-60% of cases.³ To our knowledge, however, only one paper has specifically examined lithium augmentation in elderly depressed patients: good responses were achieved in five, but the overall success rate was not recorded.⁴

We treated nine patients with lithium augmentation who had failed to respond to tricyclic

antidepressants (and in four cases also to electroconvulsive therapy). They came from a series of 59 consecutive referrals to a catchment psychiatric service meeting and met the International Classification of Diseases (revision 9) criteria for manic depressive illness (37) or depressive neurosis (22). Systematic comparisons between lithium treated subjects, those who responded to tricyclic antidepressants (18), and others who failed to respond to tricyclic drugs (9) showed no significant demographic differences, although delusions were more common in the lithium treated group (5/9) than the other group of non-responders (1/9; $p < 0.01$). Lithium augmentation was successful in six of the nine patients. In two cases lithium had to be discontinued because it was poorly tolerated, and one patient failed to respond despite an adequate trial of lithium. At follow up (median 6 months, range 3 to 20 months) seven of the nine subjects in the lithium treated group were well. This was similar to the outcome in those who responded to tricyclic antidepressants (14/18) and significantly better than that in the other non-responders (0/9; $p < 0.01$).

We conclude that lithium augmentation is a relatively well tolerated treatment manoeuvre in refractory depression in old age and may be of particular use in delusional depression and when electroconvulsive therapy has failed. We are planning a prospective trial of lithium augmentation in the elderly.

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- 1 Murphy E. The prognosis of depression in old age. *Br J Psychiatry* 1983;142:111-9.
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SIR,—Dr Bob Baldwin has made a good case for an aggressive approach to the treatment of late life depression (20 February, p 519). He suggests that the cardiotoxic effects of tricyclic antidepressants have been exaggerated. This may perhaps be so in patients who are depressed without associated cognitive dysfunction, but dementia and depression often overlap and many patients will be prescribed antidepressants. Our observations from a recent study¹ suggest that, at least in this group, care must be exercised in prescribing tricyclics, not because of their cardiotoxic potential but because of their potent anticholinergic activity.

Thirty seven patients with dementia or depression, or both (mean age 79 years; 16 women), were diagnosed on *Diagnostic and Statistical Manual-III* criteria and assessed using the Hamilton rating scale for depression and Sandoz clinical assessment-geriatric rating scale. All patients with clinically important depression and those with positive results with a dexamethasone suppression test were treated with full therapeutic doses (150 mg/day) of amitriptyline for up to three months, after which the clinical assessments were repeated. All adverse reactions were recorded throughout the study.

The response to antidepressant treatment was variable: only four of 23 patients prescribed amitriptyline showed an improvement of their depressive symptoms. Among the remaining 19 the treatment had to be stopped within two weeks in five and by the end of four weeks in three more because of adverse reactions. The reason for termination of treatment was a deterioration of mental state in seven patients (five developed confusion and agitation, two increasing agitation,

and all showed a global deterioration of dementia score). Five others developed the usual anticholinergic side effects such as dryness of mouth and problems with micturition, and two became incontinent. Six showed minor electrocardiographic changes but these were clinically unimportant. In five the symptoms of confusion and agitation improved within two weeks of stopping medication.

These findings suggest that patients with dementia, with or without depression, show poor tolerance for tricyclic antidepressants. The mechanism of this deterioration of cognitive functions is not clear. Cholinergic mechanisms have been implicated in the aetiopathogenesis of dementia, and several reports have shown a deficiency of acetylcholine in the brains of elderly dementing patients.^{2,3} Anticholinergic activity also appears to relate to clouding of consciousness.⁴ All tricyclic antidepressants have an intrinsic anticholinergic activity and this action may worsen the precarious balance of cholinergic mechanisms in the brains of dementing patients, causing an aggravation of acetylcholine deficiency. The contribution made by the hypotensive effects to the clinical deterioration seen in these patients is not clear, but it is unlikely to be a major factor since serious falls in blood pressure were not detected.

These observations have important implications for the management of patients with dementia who may also have an affective disorder. Since tricyclic antidepressants are less likely to be tolerated by these patients their use in clinical psychiatry needs to be tempered with caution.

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Hypnotic drug use for the elderly

SIR,—Benzodiazepines share the same pharmacological effects and create the same problems whether described as hypnotics or anxiolytics. It is often convenient, therefore, to ignore these two therapeutic categories and refer generically to "tranquillisers" or "sedatives." While usefully emphasising similarities, however, these terms can also obscure some important differences.

In both Dr P Tyrer's leading article (27 February, p 588) and the paper by Dr E K Rodrigo and others (27 February, p 603) there is, for example, an implicit assumption that the use of benzodiazepines should necessarily be mediated by psychiatric disturbance. Thus while the symptom of anxiety is given prominence in both articles the topic of sleep is mentioned in neither. This assumption may be valid for younger people but is unlikely to be valid for the elderly. Long term hypnotic drug use in old age is directly related to the sleep problems experienced by that age group, and these problems are often somatic in origin.¹ One of the clear implications of our own paper (27 February, p 601), and that of Rodrigo and others, therefore, is the need for a broader, more flexible clinical response to complaints of poor sleep in later life—a response which includes assessment, education, counselling, and the involvement of other agencies, particularly clinical

psychology. Unfortunately, this implication is easily overlooked if the problems of long term "tranquilliser" use are discussed only in terms of daytime anxiety management and presumed psychiatric disturbance.

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SIR,—Dr Kevin Morgan and colleagues (27 February, p 601) report a significant increase in the prevalence of hypnotic drug use with age. However, they include antidepressants as hypnotic drugs and I note that 9% of users were taking antidepressants.

The Liverpool longitudinal community survey of health among the elderly used standard interviews to gather a wide range of information, including data on drug use in the month before interview.¹ Data are now available from both the initial survey (1982-3) and the three year follow up. When the use of benzodiazepine hypnotic agents was analysed 8.8% (94) of the 1070 people surveyed in year 0 and 11.9% (83) of the 695 surveyed in year 3 were found to be users and, like Dr Morgan and colleagues, we found a significant excess of women. There was, however, no significant increase in use with age within the two study years, although there was a higher proportion of very elderly users in year 3 than in year 0 (table).

Age distribution of hypnotic users

Age range	% Of sample	
	Year 0 (n=1070)	Year 3 (n=695)
65-74	8.4	10.8
75-84	10.5	13.6
≥85	5.4	10.6

Using a log linear model: χ^2 year $\times$ age $\chi^2 = 8.15$, $df = 2$, $p = 0.017$; χ^2 age $\chi^2 = 4.53$, $df = 2$, $p = 0.104$.

The prevalence of both depressive psychosis and neurosis increase sharply in those aged 79 and over,¹ and, although general practitioners recognise depression in the elderly, they do not always treat it effectively.² By including antidepressants among hypnotic drugs (and respondents may perceive sedative antidepressants prescribed primarily for depression as drugs prescribed to promote sleep) Dr Morgan and colleagues may be reporting an increase in hypnotic use with age. This may be partly due to an increasing prevalence of depression with age which is being recognised and treated.

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Providing donor organs for transplantation

SIR,—Transplant surgeons and, more especially, our patients are indeed most grateful for the efforts made by Mr P Richards (27 February, p 642) and other neurosurgeons, anaesthetists, and intensivists in approaching relatives at the time of bereavement to allow provision of organs for transplantation.