Change in neuroleptic prescribing practice

James P. Warner, Richard Slade and Thomas R. E. Barnes

Concerns about the use of high doses of neuroleptic medication prompted an audit of prescriptions of these drugs in a large psychiatric hospital. Following an initial audit in 1991 of 196 patients, a follow-up of 192 patients was undertaken in 1993. A significant reduction in levels of neuroleptic medication was found, although doses still tended to remain high.

Over the last two decades there has been a trend towards prescribing higher doses of neuroleptic medication in the treatment of schizophrenia. In the USA, Reardon *et al* (1989) reported that the mean daily neuroleptic dose received by individuals doubled between between 1973 and 1982. This practice has been reflected by revision upwards of the *British National Formulary* (BNF) prescribing limits. The maximum daily dose of chlorpromazine in 1960 was 450 mg, now it is 1000 mg. Similar increases have occurred with other neuroleptics. There is considerable inconsistency in the BNF recommended dose ranges for neuroleptic drugs in terms of chlorpromazine equivalents. For example, the upper limit for thioridazine in chlorpromazine equivalents is 800 mg, the equivalent limit for haloperidol is 20,000 mg and trifluoperazine has no upper limit. Furthermore, patients prescribed more than one neuroleptic may be receiving a high total dose, although the dose of each individual drug is within the recommended range.

There is little convincing evidence that prescribing high doses of neuroleptic medication confers additional benefit over standard doses in the management of acute or chronic schizophrenia. Baldessarini *et al*, (1988) in a review of published studies on neuroleptic doses and clinical response concluded that moderate doses of 300–600 mg chlorpromazine daily are adequate for the majority of patients with schizophrenia. Similar findings were reported by Rifkin *et al* (1991) who found that doses of haloperidol of 10 mg a day were optimal. Indeed, doses above this level are associated with greater risk of side-effects such as akathisia and parkinsonism (Van Putten & Marder, 1987). Clinicians have been advised to exercise caution in using high dose neuroleptic medication (Hirsch & Barnes, 1994; Thompson, 1994). The consensus statement from the Royal College of Psychiatrists (Thompson, 1994) also calls for an audit of medication usage. Audit is an important part of psychiatric practice but many audit exercises fail to implement recommendations derived from the exercise or ascertain whether changes in practice have been effected (Lelliott, 1994).

An audit on the use of neuroleptic medication in a large psychiatric hospital was undertaken in 1991. The main aim of this exercise was to bring to the attention of clinicians the doses of neuroleptic drugs their patients were receiving, in particular doses above the BNF recommended range. These data were disseminated and discussed among the clinicians involved. When the results were presented, comparison with the BNF recommended doses was made. Following a two year interval the audit was repeated to assess the change, if any, in prescribing practice. If changes were to be found, they might be considered to be at least partially attributable to the initial audit.

The study

Horton is a psychiatric hospital undergoing closure, with approximately 450 beds at the time of the study. The prescriptions of patients on nine wards were audited in 1991. Included in the audit were long-stay, acute adult, and forensic wards and a regional unit for treatment resistant schizophrenia. The following data were recorded: age, details of all prescribed medication including use of depot and concurrent prescription of more than one neuroleptic. The total neuroleptic

https://doi.org/10.1192/pb.19.4.237 Published online by Cambridge University Press

dose of each patient was converted into chlorpromazine equivalents (Rey *et al*, 1989). The results of this first survey were distributed to all the clinical teams involved by presenting the data at the hospital postgraduate meeting and discussion at the Local Medical Committee. In 1993, a follow-up audit was undertaken. Statistical analysis was performed using χ^2 test and comparison of the standard error of means.

Findings

For the 196 patients (age 17–89) reviewed in 1991, the mean neuroleptic dose in chlorpromazine equivalents was 1808 mg, (standard deviation=3003) with a range from 0–27,085 mg. Twenty-five patients (13%) were not receiving neuroleptic medication. A hundred and seven patients (54%) were prescribed depot medication and 88 (45%) were prescribed two or more neuroleptics concurrently.

In 1993, 192 patients (age 20–88) were audited. This sample included 85 patients who had been surveyed in the initial audit in 1991. The mean neuroleptic dose was 1262 mg (standard deviation=1373) with a range 0–7171 mg. Twenty-two patients (11%) were not receiving neuroleptic medication. Depot medication was being given to 103 patients (54%) and 79 patients (41%) were prescribed two or more neuroleptics concurrently. The mean neuroleptic doses in the two audits were significantly different ($P<0.001$, standard error of means).

In 1991, 44% of patients (86 out of 196) received over 1000 mg chlorpromazine equivalents daily. The comparable figure for 1993 was 42% (81 out of 192). Between 1991 and 1993 the number of patients receiving neuroleptic medication equivalent to an excess of 4000 mg chlorpromazine daily fell from 23 (12%) to six (3%), ($P<0.01$, χ^2 test). In 1991 four patients (2%) were receiving over 10,000 mg chlorpromazine equivalents daily. No patients received such high doses in 1993. Similar proportions of patients received depot medication and neuroleptic polypharmacy in 1991 and 1993.

A cohort of 85 patients were common to both audits, of whom five were on no medication on either occasion. Of the remaining 80 patients neuroleptic doses had been reduced in 45 (56%). However, dosage had been reduced to below 1000 mg chlorpromazine equivalents a day in only eight cases.

Comment

Two audits of neuroleptic prescribing were performed two years apart within the same hospital, with comparable numbers of patients. The results showed that a substantial proportion of patients in both audits were being prescribed high doses of neuroleptics. In both audits, nearly half the patients on neuroleptics were prescribed doses which, when converted to chlorpromazine equivalents, were in excess of the BNF guidelines for chlorpromazine. However, for individual patients, these doses may have been within recognised limits for the particular neuroleptic that the patient was receiving given the wide variation in the maximum doses recommended in the BNF. This highlights the lack of consistent criteria for defining maximum dose and the problems of deciding what is a high dose for a particular drug.

In the period between the audits, there was a significant reduction in the number of patients prescribed neuroleptics in excess of 4,000 mg chlorpromazine equivalents daily. It is encouraging that these 'megadoses', evident in the 1991 audit, were less common in 1993. There was no significant change in the number of patients either receiving no neuroleptic medication or two or more neuroleptics concurrently.

The main finding of this study was the significant overall fall in mean neuroleptic dosage, which was largely a reflection on the decrease in prescribing of very high doses. The results of the first audit were widely disseminated among the medical staff at Horton and probably had an impact on prescribing practice, although prescribers may also have been influenced by the increased awareness of the hazards of high doses of neuroleptic medication.

References

BALDESSARINI, R. J., COHEN, B. M. & TEICHER, M. H. (1988) Significance of neuroleptic dose and plasma level in the pharmacological treatment of psychoses. *Archives of General Psychiatry*, **45**, 79–91.

BARNES, T. R. E. & BRIDGES, P. K. (1980) Disturbed behaviour induced with high dose antipsychotic drugs. *British Medical Journal*, 274–275.

https://doi.org/10.1192/pb.19.4.237 Published online by Cambridge University Press

HIRSCH, S. R. & BARNES, T. R. E. (1994) Clinical use of high-dose neuroleptics. *British Journal of Psychiatry*, **164**, 94–96.

LELLIOTT, P. (1994) Clinical audit in psychiatry. *Hospital Update*, **20**, 82–91.

MEHTONEN, O. P., ARANKO, K., MALKONEN, L. *et al* (1991) A survey of sudden death associated with the use of antipsychotic or antidepressant drugs- 49 cases in Finland. *Acta Psychiatrica Scandinavica*, **84**, 58–64.

REARDON, G. T., RIFKIN, A., SCHWARTZ, A. *et al* (1989) Changing patterns of neuroleptic usage over a decade. *American Journal of Psychiatry*, **146**, 726–729.

REY, M-J., SCHULZ, P., COSTA, C. *et al* (1989) Guidelines for the dosage of neuroleptics 1. chlorpromazine equivalents of orally administered neuroleptics. *International Clinical Psychopharmacology*, **4**, 95–104.

RIFKIN, A., DODDI, S., KARAJGI, B. *et al* (1991) Dosage of haloperidol for schizophrenia. *Archives of General Psychiatry*, **48**, 166–170.

THOMPSON, C. (1994) The use of high-dose antipsychotic medication. *British Journal of Psychiatry*, **164**, 448–458.

VAN PUTTEN, T & MARDER, S. R. (1987) Behavioral toxicity of antipsychotic drugs. *Journal of Clinical Psychiatry*, **48**, (supplement 9), 13–19.

*James P. Warner, *Lecturer/Honorary Senior Registrar, Academic Department of Psychiatry, Royal Free Hospital School of Medicine, Rowland Hill Street, London NW3 2QG;* Richard Slade, *Senior Registrar, Psychiatry Directorate, Manchester Royal Infirmary, Oxford Road, Manchester M13 9BX and* Thomas R.E. Barnes, *Professor of Clinical Psychiatry, Department of Academic Psychiatry, Horton Hospital, Epsom, Surrey KT19 8PZ*

*Correspondence

https://doi.org/10.1192/pb.19.4.237 Published online by Cambridge University Press