

**Treatment of extrapyramidal side-effects**

SIR: Fernando & Machanda (*Journal*, May 1988, 152, 722–723) recently reported two cases of neuroleptic-induced extrapyramidal side-effects (EPS) (muscle rigidity and drooling) which were successfully treated with oral calcium. Both patients had EPS which persisted in spite of anticholinergic or antihistaminic agents (benztropine, procyclidine, or diphenhydramine).

We have completed three studies of the effects of the calcium-channel antagonists (CCAs) verapamil, nifedipine, and diltiazem on tardive dyskinesia, during which EPS were also rated (Reiter *et al.*, 1989; Adler *et al.*, 1988; Duncan *et al.*, in preparation). Based on the report of Drs Fernando & Machanda, we assessed whether there was any increase in EPS after administration of the CCAs.

Methods were similar for all three studies. EPS were quantified by the Hillside/LIJ modification of the original Simpson/Angus EPS Scale (Simpson & Angus, 1970). EPS ratings were performed on alternate days over a 5–15 day period by a rater who did not know when treatment with CCAs was to begin. Each patient was rated by the same evaluator throughout the trial. Multiple ratings were made in order to blind the rater. All ratings were discarded except for those which were obtained immediately before treatment and on the last day of treatment.

Neuroleptics and all other medications were held constant for at least four days before, and throughout the course of treatment with CCA. Patients were excluded if they had any contraindications to CCAs (e.g. hypotension, cardiac conduction delays or block) or cardiovascular illness requiring medication.

CCAs were prescribed by physicians who did not rate the patients. The initial doses of CCAs were: verapamil, 160 mg/day; diltiazem, 120 mg/day; or nifedipine, 30 mg/day. For those patients who did not develop hypotension or bradycardia the dose was increased to: verapamil, 320 mg/day; diltiazem, 240 mg/day; or nifedipine, 60 mg/day.

Nine schizophrenic patients were treated with verapamil (mean maximal dose = 231 mg/day; s.d. = 84.3) for 2–5 days. Twelve patients (schizophrenia, 10; bipolar, manic, 2) received diltiazem (mean maximal dose = 195 mg/day) for 4–12 days. Nifedipine was administered to eight schizophrenic patients for 7–14 days; all patients received 60 mg/day. Patient characteristics have been presented in more detail previously (Adler *et al.*, 1988; Reiter *et al.*, 1989).

Statistical analyses were performed by paired Student's *t*-tests (two-tailed) on total Simpson/

Angus EPS scores (items 1–9) at baseline v. scores on the last day of treatment with maximal dose of CCA.

No significant effects were observed on EPS after any of the CCAs (all  $t < 1$ ). EPS scores were unchanged from a mean of  $3.1 \pm 2.5$  at baseline to a mean of  $2.8 \pm 2.0$  after verapamil ( $t(8) = 0.71$ , NS). EPS was also unchanged after diltiazem (mean at baseline =  $3.5 \pm 3.3$ , mean after diltiazem =  $3.2 \pm 2.8$ ;  $t(11) = 0.65$ , NS) and after nifedipine (mean at baseline =  $2.1 \pm 2.1$ , mean after diltiazem =  $2.0 \pm 1.6$ , NS). No clinically apparent changes in EPS were observed in any of the individual patients.

Our findings of an absence of effect of the CCAs verapamil, diltiazem, or nifedipine on EPS in no way contradicts the reported improvement in EPS after administration of calcium. Calcium may affect EPS via mechanisms different from those which affect cellular gating or intracellular calcium concentrations. Nonetheless, Drs Fernando & Machanda's findings might lead one to predict that CCA treatment would increase the mild EPS that our patients showed at baseline; this was not observed.

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**References**

- ADLER, L., DUNCAN, E., REITER, S. *et al.* (1988) Effects of calcium channel antagonists on tardive dyskinesia and psychosis. *Psychopharmacology Bulletin*, **24**, 421–426.
- REITER, S., ADLER, L. & ANGRIST, B. *et al.* (1989) Effects of verapamil on tardive dyskinesia and psychosis in schizophrenic patients. *Journal of Clinical Psychiatry*, **50**, 26–27.
- SIMPSON, G. M. & ANGUS, J. W. S. (1970) A rating scale for extrapyramidal side-effects. *Acta Psychiatrica Scandinavica, Suppl.* **212**, 11–19.

**Spontaneous orgasms – any explanations?**

SIR: I should like to report an unusual sexual problem.

*Case Report:* A 45-year-old muslim mother of three, who had been widowed three years earlier, complained bitterly of repeated, uncontrolled orgasms. These occurred up to 30 times per day without any sort of sexual contact. Her social functioning was severely impaired and she stopped practising her regular religious rituals and visiting the holy shrines.