Psychomotor performance dose response relationship for caffeine and theophylline

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The methylxanthines, caffeine(C) and theophylline(T), improve psychomotor performance in elderly volunteers at low therapeutic concentrations(Yu et al, Br J Clin Pharmac 32, 341-345). This study was designed to define the dose response relationship for these drugs. Ten healthy elderly(60-82 yrs) volunteers completed a placebo controlled, double blind, six period crossover study comparing three doses of T, two doses of C and placebo. Previously validated psychomotor tests used were the continuous attention task(CAT), choice reaction time(CRT) symbol digit substitution tests(SDST) and a visual analogue scale of alertness(VAS). On each study day subjects had a baseline assessment with serial testing up to 2.5 hours post drug. Measured peak concentrations of T were 2.4mg/l, 5.5mg/l and 10.4mg/l, and of C, 4.4mg/l and 7.8mg/l. For each drug the maximum effect from baseline was calculated and compared to placebo. There was no significant effect of T or C on SDST or CRT(motor or latency time). At T10.4mg/l subjects were significantly more alert on the VAS(Wilcoxon Rank Sum, p=0.025). The CAT error index scores were significantly reduced with all doses of T(paired t-test, p<0.05) but this effect appeared reduced at the higher concentrations.

This confirms earlier work that lower concentrations of T improve CAT scores, but this study suggests that higher concentrations return scores towards placebo values.

INAPPROPRIATE STEROID USE IN AIRWAYS OBSTRUCTION IN ELDERLY INPATIENTS

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Whilst asthmatic patients characteristically respond to steroids, only 10% patients with chronic obstructive airways disease benefit (Callahan et al 1991, Ann Intern Med 114: 216 - 23). In collaboration with the Royal College of Physicians Research Unit, a multidisciplinary team has developed appropriateness of prescribing indicators for elderly medical inpatients. The \( \beta \)-agonist and steroid co-prescription indicator is presented here. An algorithm of appropriate steroid prescribing was developed from well designed published trials and included a) steroid responsive airways disease, b) steroid trial with objective monitoring, c) another steroid indication. Inappropriate prescribing included a) steroid use without evidence of benefit b) no steroid in asthmatics requiring regular \( \beta \)-agonists. Drug charts of 1500 medical inpatients aged 65 or over in 18 hospitals in Wales and England were screened to identify patients taking inhaled \( \beta \)-agonists. Prescribing and clinical data were collected and compared to the algorithm. A total of 272 patients were prescribed \( \beta \)-agonists. Although 67% of these were prescribed steroids only 51% met criteria for appropriate steroid prescription (p<0.01). Use of \( \beta \)-agonist alone was largely appropriate (80/85) prescribing was more appropriate in teaching units than in DGHs (p=0.02) but similar in acute and rehabilitation units (p=0.9). Inappropriate overuse of steroids was more common in patients 280 years (p<0.05).

Figure 1 Observed and appropriate steroid prescribing in 18 units

This is a simple method of assessing prescribing and demonstrates the importance of collecting appropriateness data in view of casemix variation (figure 1).

PREVENTION OF DRUG RELATED PROBLEMS IN ELDERLY PATIENTS


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Although drug related problems (DRPs) are known to be common in the elderly, literature on their prevention is sparse. This study assessed the incidence of DRPs in elderly patients admitted to hospital before (phase I) and after (phase II) implementation of preventive strategies. Of 1011 elderly patient admissions studied in phase I, DRPs were present in 144 (14.2%), with 54 (5.3%) admissions identified as being definitely or probably drug related. The main drug group implicated was NSAIDs, being responsible for 15/54 (28%) of admissions due to a DRP. Since a large percentage of these were considered to be 'definitely preventable', intervention strategies targeted NSAIDs and comprised an educational bulletin aimed at GPs, a patient information leaflet distributed through community pharmacists, and an oral presentation to trainee GPs. In phase II, a statistically significant drop in NSAID prescribing in Tayside compared to the rest of Scotland was observed (Chi-squared test, p<0.001). The strategies were not demonstrably effective in reducing the number of admissions due to adverse effects of NSAIDs. However, there appeared to be an improvement in the first 4 months after their implementation which was not maintained. The study results lend further weight to the case for reducing and rationalising the prescription of NSAIDs to elderly patients. A continuous programme of education may be necessary to limit NSAID use.