

adequate seizures, a higher energy output is required for the Duopulse device. Decreasing the intensity or duration of the partial sine wave stimulus, as suggested by the authors, would be likely to have the effect of diminishing its ability to generate an adequate ictal response.

This possibility is an important consideration, since the output of both devices may be marginal with respect to patients with high seizure thresholds, e.g. the elderly. Experience with contemporary American pulse ECT devices has shown, in this regard, that brief pulse seizure thresholds between 50 and 100 J are not rare. On the other hand, such experience has also made it clear that seizure thresholds in other patients may be as low as 5 J, suggesting that fixed parameter devices such as the Ectron Duopulse may not be as optimal in this regard as newer generation equipment by Ectron, Elcot, Mecta, Medcraft, and Somatics (the latter four of US origin).

With respect to the issue of constant voltage versus constant current stimulation, it can be said that the latter appears to be a more physiological means of stimulation in terms of neuronal depolarisation. In addition, as we have pointed out elsewhere (Weiner & Coffey, 1986), relative differences between constant current and constant voltage stimulation also exist concerning the effects of inter-electrode resistance. A high resistance, particularly likely in the elderly, may result in insufficient current delivery with a constant voltage device. A low resistance, however, possibly on the basis of increased shunting of current across the scalp, will be associated with a relatively high current with the constant voltage apparatus. While this latter effect may allow the constant voltage device to compensate for increased scalp shunting, it also raises the likelihood of skin burns in such cases.

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References

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SIR: Dr Weiner has published data showing lower seizure thresholds for patients receiving a brief stimulus compared with patients receiving sine-wave

stimulus (Weiner, 1980). This supports the assertion that more energy may be required for a sine-wave stimulus than for a pulse stimulus. However, in Dr Weiner's investigation, he used equipment which produces a continuous sine wave for short duration (Medcraft B-24 MK III). The important difference between this machine and the Ectron Duopulse MK IV used in our study is that in the latter machine, the sine wave is truncated by a thyristor switch. This means that there is a rapid change in voltage similar to the rising edge of the pulses in the Ectron constant current machine. These waveforms can be seen in Fig. 2 of our paper. It is therefore not valid to assume that results obtained with a pure sine-wave stimulus are relevant to a truncated sine-wave stimulus.

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Clonidine and Neuroleptic-Resistant Mania

SIR: Maguire & Singh (*Journal*, June 1987, **150**, 863–864) report the efficacy of clonidine in three cases of haloperidol-resistant mania. In the light of our experience, we would like to stress two points: firstly, the anti-manic effect of clonidine is already documented – our team at the Salpêtrière reported the anti-manic effect of this compound as early as 1980 (Jouvent *et al*, 1980) and, more recently, we published a study bearing on 24 patients; secondly, the latter study showed that a poor previous response to neuroleptic drugs seemed to be a predictor of clonidine efficacy (Hardy *et al*, 1986).

These facts, and the three supplementary cases published by Maguire & Singh, are not necessarily in favour of the 'noradrenergic hypothesis of mania', but may indicate that some patients who do not respond to neuroleptic medication may have an NA hyperactivity which benefits from NA reduction by clonidine.

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