Disturbances of emotional behavior, referred to as emotionalism, manifest by easy crying, or less often laughing, is a common complication of stroke, affecting at least one quarter of survivors. In most cases the disorder is mild and transient, but when severe it may cause distress and embarrassment both to the patient and their friends and family, leading to the avoidance of social contact and reduced quality of life. Our objective in this study was to assess the effectiveness of pharmacological interventions, as compared with placebo, for emotionalism after stroke.

**Methods**

**Search Strategy**

**Selection Criteria**
We considered all truly randomized (and quasi-randomized) controlled trials comparing psychotropic medication to placebo in patients with clinically diagnosed stroke and emotionalism, as defined by the authors in each study.

**Results**
We identified 5 trials (published in 12 articles) with 103 participants at entry.1-5 Two trials were of crossover design1,4 and outcome data were not available from the first phase (before crossover) in an appropriate format for inclusion. This review reports data from 3 trials with 75 participants.

The 3 trials showed treatment effects on the primary endpoint of emotionalism: 50% reduction in emotionalism,2 “reduced” self-reported tearfulness3 (Figure), and an 8-point reduction in scores on a Pathological Laughter and Crying scale.6 Although the point estimates were consistent with large treatment effects, the confidence intervals were wide, suggesting that the treatment may have had only a small positive effect, or in the case of the 1 trial,1 potentially a small negative effect on 2 endpoints.

**Discussion**
Although this systematic review suggests that antidepressants reduce the frequency and severity of crying episodes among stroke patients, our conclusions are guarded by several methodological deficiencies in the studies. To begin with, there is no standard definition available for emotionalism, and no externally validated scales were used by any of the studies. In addition, multiple methods were used to report findings, both within and between trials, which made the pooling of emotionalism data inappropriate.

Trials included patients whose index stroke varied from 6 days to 13 years before randomization, and with coexistent depression, whereas the duration of treatment was short in most studies. Because the pathophysiology and response to treatment may vary with the duration from stroke onset, it may be difficult to generalize this evidence into clinical practice.

All the included trials were small, with only 1 trial2 reporting adequate concealment of the randomization sequence. Only 1 trial3 systematically recorded and reported all adverse events in the study, thus making an accurate presentation of the benefits and risks of treatment with antidepressants impossible.

In summary, our review provides suggestive, but not definitive, evidence that antidepressants can reduce the frequency of crying, sometimes even abolishing it altogether, an...
effect that does not seem specific to one drug or class of drugs.

Implications for Practice
Despite the lack of strong evidence, it seems reasonable to use antidepressants in a therapeutic trial in individual patients with persistent emotionalism that is sufficiently severe, and to accept the small risks associated with such agents in the elderly.

Implications for Research
Future trials need to address the following: (1) a validated scale is required for the presence and severity of emotionalism to facilitate future clinical studies; (2) studies of emotionalism should include a standard measure of depression, because it is a main confounder in assessing response to treatment; (3) trials with larger sample sizes are necessary to allow adjustment for concomitant depression and time since stroke; (4) trials with longer treatment duration would establish relapse rates or continued therapeutic benefit; (5) more careful assessment and reporting of adverse events would allow quantification of risks and benefits of treatment; and (6) trials should include 3 or 4 main outcomes for assessment, including 1 a priori primary hypothesis for testing, and should ensure that the measures are clinically relevant.


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References
Pharmaceutical Interventions for Emotionalism After Stroke
Judith A. Horrocks, Maree L. Hackett, Craig S. Anderson and Allan O. House

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