Computerised speech and language therapy in post-stroke aphasia

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Cerebrovascular diseases are among the most common causes of disability worldwide. Around one third of stroke survivors initially have aphasia,[1] and symptoms of aphasia persist in up to 40% of these patients.[2] Importantly, chronic post-stroke aphasia affects vocational reintegration, social life, and emotional wellbeing, while placing major burdens on the health-care system.[3]

In *The Lancet Neurology*, Rebecca Palmer and colleagues[4] report the results of a multicentre, single-blinded, randomised controlled trial assessing the effectiveness of three interventions, each with a 6-month duration, in 240 patients with aphasia more than 4 months after stroke. The interventions were: usual care combined with daily, self-managed, computerised speech and language therapy (CSLT); usual care combined with attention control, and usual care alone. Compared with the other interventions, CSLT resulted in clinically significant gains in retrieving personally relevant words. However, this progress did not translate into improved conversational ability, nor did it benefit the participants' perception of communication performance, social participation, or quality of life. Similarly, health economics evaluation suggested that CSLT intervention is unlikely to be cost-effective for the whole population with aphasia.

The strengths of this trial include a high-quality methodological approach, generalisability due to its naturalistic setting, and representative recruitment of patients from the clinical population, along with a broad range of outcome measures assessing impairment severity (naming ability), communicative function (conversational ability), and social participation (quality of life).

The implicit assumption about gains in word retrieval through naming training—as shown in the trial by Palmer and colleagues—has often been that these gains will translate into improvements in conversation automatically, and that the increased use of personally relevant words will improve patients' quality of life. Given that self-administered CSLT offers a low-cost and widely available approach to training, this method might be more compatible with demands of health-care policy makers and insurance companies than face-to-face interventions, when considering economic constraints and shortages in staff delivering the treatment.

However, Palmer and colleagues have now clearly shown that these assumptions are incorrect: irrespective of progress in retrieval of personally relevant words, communicative function and social participation did not improve, nor did the intervention increase the patients' quality of life or reduce costs.

In contrast, a high-quality randomised controlled trial[5] of 156 patients with chronic post-stroke aphasia has shown that, compared with standard care, a mix of cognitive and linguistic approaches, communicative and pragmatic therapy, and computerised training can improve symptoms in patients with chronic post-stroke aphasia, as revealed by outcomes assessing communicative function, including the Amsterdam-Nijmegen Everyday Language Test (ANELT). Similarly, a further trial[6] of 26 patients with chronic post-stroke aphasia provides evidence that intensive naming therapy combined with training-adjuvant interventions—such as non-invasive brain stimulation—leads to improved scores on outcomes reflecting communicative function (eg, Communicative Effective Index or Partner Communicative Questionnaire).

It is worth noting that computerised forms of intensive speech and language therapy are not necessarily confined to naming of objects shown on the screen; rather, they might be applicable as well for communicative and pragmatic methods[7] alongside non-invasive brain stimulation[8] to enhance conversational ability. Hence, attempts to develop innovative techniques of CSLT seem to be justified. Moreover, treatment intensity in Palmer and colleagues' trial, even in the CSLT group, was less than the currently recommended dose of speech and language therapy (5 h per week),[9] which might have also contributed to the absence of progress in conversational ability. Future studies should use outcome measures with validated sensitivity to treatment-induced changes (eg, ANELT as part of a core outcome set defined in an international consensus statement).[10]

A randomised controlled trial combining an adaptive version of computerised intensive naming therapy (10 h per week), communicative and pragmatic therapy, and non-invasive brain stimulation is underway (NCT03930121). In the event of significantly higher increase in the primary outcome (ANELT) in the therapy

plus stimulation condition, as compared with the therapy plus placebo condition, this trial would show clinically significant gains in conversational ability.

In summary, computerised forms of speech-language therapy can be recommended as an add-on strategy; however, they should not be the sole means of treatment for individuals with aphasia—at least not now. Combining traditional face-to-face speech and language therapy with new approaches, including non-invasive brain stimulation, might promote recovery of language function and, just as importantly, increase quality of life. Rather than serving as a low-cost alternative to traditional face-to-face speech and language therapy, future computerised rehabilitation methods will hopefully advance the effectiveness of established programmes in the treatment of patients with chronic post-stroke aphasia.

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I declare no competing interests.

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Endpoint choice for inclusion body myositis: a step too far?


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Inclusion body myositis is a relentlessly progressive inflammatory myopathy with complex pathology for which no effective treatment is available. The disease leads to substantially reduced quality of life because of impaired ambulation, weakness of hands and arms, and dysphagia with danger of aspiration.[1] In *The Lancet Neurology,* Michael Hanna and colleagues report findings of the RESILIENT study,[2] an international, multicentre, randomised, placebo-controlled, phase 2b study of bimagrumab for the treatment of inclusion body myositis. This trial is the largest reported in an inflammatory myopathy so far. The study tested the safety and tolerability, and the efficacy of monthly intravenous infusions of 1 mg/kg, 3 mg/kg, or 10 mg/kg bimagrumab compared with placebo for 1 year in 251 patients with inclusion body myositis.

Bimagrumab is a fully humanised monoclonal antibody that binds to activin type 2 receptors on skeletal muscle fibres. This action prevents receptor binding of the physiological ligands activin and myostatin, which are gatekeepers of skeletal muscle growth. Bimagrumab has been shown to induce muscle growth in cell culture and mice.[3] In a pilot study of 14 patients with inclusion body myositis, one intravenous dose of bimagrumab 30 mg/kg augmented muscle volume and lean body mass.[4] In the RESILIENT study,[2] an increase in lean body mass was observed in patients who received 3 mg/kg or 10 mg/kg bimagrumab, but no improvements in the primary endpoint—change from baseline in 6-min walking distance (6MWD)—were seen. Secondary endpoints were also not significantly different between patients receiving the drug and those taking placebo, including the quantitative muscle strength of the quadriceps, hand grip and pinch-grip dynamometry, frequency of falls, and swallowing performance. Scores on the inclusion body myositis physical functioning assessment (sIFA) questionnaire were the only endpoint to show a significant improvement, in the 10 mg/kg group, compared with placebo.

Several reasons could account for why the RESILIENT study failed to show beneficial effects for bimagrumab treatment. First, an increase in skeletal muscle mass does not automatically lead to augmentation of muscle strength. In previous studies in patients with inclusion