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LETTER TO THE EDITOR

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Letter: Safety and Feasibility of Autologous Mesenchymal Stem Cell Transplantation in Chronic Stroke in Indian patients. A four-year follow up

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I thank Bhasin *et al.*,[1] for their fascinating study examining the long-term effects of therapeutic mesenchymal stem transplants in stroke patients. Their results importantly suggest that at four years of follow up no significant side effects, such as the formation of tumours, occur with this treatment. In addition, they found a statistically significant improvement in the independence of experimentally-treated patients over time (measured with the modified Barthel Index Score), as well as improvements in upper limb motor recovery (measured with Fugl Meyer scale).

Interestingly, no significant improvement was seen in terms of overall muscle power and tone (using Muscle Power and modified Ashworth scales). It seems unusual that patients would be more independent with stem cell therapy, but that this would not be due to an improvement in muscle power or stiffness. It is theoretically interesting to try and reconcile these different patterns of recovery. For example, could this suggest anything about the regenerative effects of mesenchymal stem cells?

On the other hand, a difference may not have been detected due to a low sample number, which was not enough to detect a statistically significant improvement. In line with this the authors highlight that a weakness of this study is the limited sample number (n=6 in each of experimental and control patient groups). This was due to ethical considerations. Therefore, the information in this study could be used as pilot data for a larger study. More specifically, it could be used in a sample number calculation to suggest an appropriate sample number to assess for any statistically significant differences in muscle power and tone, should any exist[2]. In turn, this, and the proof that no significant side effects are related to the treatment, would help to ethically justify a study with a larger, statistically appropriate number.

Within such a larger study, there would also be an opportunity to recruit older patients, as those used in this study were relatively young (mean age 42.8); this would be well placed to fit the demographics of stroke, which, for example, a third of occur in the people over 85 years old[3]. Such results would be of more general and direct interest to mainstream clinical practice.

One might protest at this point to argue regenerative abilities decrease as one ages. In the context of stroke, aged brains contain less proliferative neural progenitor cells, and initiate recovery at a later stage than a younger brain[4,5]. Nevertheless, the aged brain remains able to regenerate, which invites cell therapeutic approaches, including mesenchymal stem cells, induced pluripotent stem cells, and others[6]. Furthermore, animal experiments support the approach of trialling this therapy in older patients: studies in rats suggest mesenchymal stem cells are just as effective a treatment in older individuals as younger ones[7].

Finding therapies for younger patients who suffer from stroke is crucial to their long-term future well-being. In an age when life expectancy is continuously rising, this is also becoming true of older people, and so extending the exciting work of this study to a larger on, incorporating older patients, offers a truly exciting opportunity to improve clinical treatments and the lives of many people.

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Potential Conflicts of Interests

None

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