

**Abstract****Autologous bone marrow mononuclear cell transplantation for patients with severe cerebral embolism**Akihiko Taguchi, M.D., Ph.D.<sup>1)</sup><sup>1)</sup>Department of Regenerative Medicine Research, Institute of Biomedical Research and Innovation

We had demonstrated that intravenous administration of bone marrow-derived mononuclear cells improves functional recovery through enhanced angiogenesis in experimental stroke models. Based on these observations, we have started phase Ⅱ, a clinical trial of cell-based therapy for patients with cardiogenic cerebral embolism (ClinicalTrials.gov ID: NCT01028794). Major inclusion criteria is the patient diagnosed with severe cardiogenic cerebral embolism (NIHSS $\geq$ 10 at day 10 after onset of stroke). Patient has 25 ml (low dose group, n=6) or 50 ml (high dose group, n=6) bone marrow aspiration on day 7–10 after onset of stroke. Autologous bone marrow derived mononuclear cells are purified by density gradient method and administrated intravenously on the day of cell aspiration. Primary endpoint is the safety and improvement of NIHSS, compared with our historical control. We have treated 12 patients and no adverse effects were observed. Most of the patients showed significant improvement of neurological function at 6 months after cell transplantation. Autologous bone marrow mononuclear cells transplantation is likely to be safe, feasible and improve functional recovery.

**Key words:** stroke, cell-based therapy, neurogenesis, angiogenesis

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