Transcoronary cell infusion with the stop-flow technique in children with single-ventricle physiology

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Abstract

Background: Almost all reports on cardiac regeneration therapy have referred to adults, and only a few have
focused on transcoronary infusion of cardiac progenitor cells using the stop-flow technique in children.

Methods: Intracoronary autologous cardiosphere-derived cell (CDC) transfer was conducted at Okayama University as
a phase 1 clinical trial for seven patients with hypoplastic left heart syndrome between January 2011 and December 2012, and as a phase 2 clinical trial for 34 patients with single-ventricle physiology between July 2013 and March 2015.
Results: A total of 41 patients with single-ventricle physiology underwent transcoronary infusion of CDC with the stop-flow technique. The median age was 33 months (range, 5–70 months) and the median weight was 10.1 kg(range, 4.1–16.0 kg). Transient adverse events occurred during the procedure, including ST-segment elevation or depression, hypotension, bradycardia, and coronary artery vasospasm. All patients completely recovered. There were no major procedure-related adverse events. In this study, transcoronary infusion of CDC using the stop-flow technique was successfully completed in all patients.