

Aortic Arch Replacement Using Selective Cerebral Perfusion: Three Years' Experience

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Abstract

Background- The present study was conducted to report our clinical experience with aortic arch replacement using selective cerebral perfusion (SCP) to evaluate the safety and usefulness of this technique.

Methods- From October 2003 to April 2007, 10 patients (mean age 51.2 years) underwent arch replacement for acute type A dissection involving the aortic arch. Operations were performed with hypothermic cardiopulmonary bypass using antegrade selective cerebral perfusion during the arch surgery. Seven patients (70%) have a history of hypertension. Six patients (60%) underwent total arch replacement and the other four (40%) had semiarch replacement. Associated coronary artery bypass graft surgery (CABG) was performed in 2 patients (20%). The mean follow-up period was 10.39 months (ranging from 1 to 42 months).

Results- Mean aortic cross-clamp time, CPB time and partial circulatory arrest time with antegrade cerebral perfusion were 121.4 (95-165), 257.7 (230-290) and 16.5 (13-22) minutes, respectively. There were two hospital mortalities and one cerebral complication. All in-hospital mortalities were in our five first cases, indicating perhaps a learning curve for this operation. During the follow-up period, no patient underwent reoperation because of recurrence of dissection. All surviving patients are still alive and free from any serious events at the time of this writing.

Conclusions- Selective cerebral perfusion is a reliable technique for cerebral protection and it facilitates the complex and time-consuming total arch replacement (*Iranian Heart Journal 2008; 9 (2):6-9*).

Key words: aortic arch surgery ■ selective cerebral perfusion

Cerebral protection is one of the most important concerns during aortic arch repair, and various methods to accomplish it have been introduced. Deep hypothermia with circulatory arrest (DHCA) is a well-established technique; it provides both good cerebral protection, even though time-limited, and a dry operative field.¹⁻⁵ However, it requires prolonged cardiopulmonary bypass (CPB) time and is often associated with coagulopathy and pulmonary complications.

Retrograde cerebral perfusion has been introduced to improve cerebral protection and to prolong the "safe" time of circulatory arrest, though the mechanisms of the protective effect are not entirely understood.⁶⁻⁹ Moreover, the complications resulting from deep hypothermia remain largely unchanged with this method.

In 2003, we began using antegrade selective cerebral perfusion (SCP) with moderate hypothermia during aortic arch operations.

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