Letter to the Editor

Which temperature is better in acute type A aortic dissection?

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We read with interest the article entitled ‘Hypothermic circulatory arrest with moderate, deep or profound hypothermic selective antegrade cerebral perfusion: which temperature provides best brain protection?’ by Khaladj et al. [1]. Recent developments such as improved circulatory support, collagen-impregnated Dacron grafts,valved conduits and all with new operational techniques have resulted in improved outcomes for patients undergoing replacement of either the ascending aorta or transverse arch. Deep hypothermic circulatory arrest (DHCA) has allowed surgeons to perform complicated procedures on the thoracic aorta when cross-clamping is anatomically or pathologically implausible. Implying DHCA is simple, there is no need for sophisticated equipment and that it provides bloodless open repair. Moreover, DHCA increases tolerable ischemic period by slowing the basal neurological metabolic rate as greatly as possible. In recent studies during thoracic aortic procedures, it is shown that circulatory arrest with deep hypothermia is associated with very low risk of permanent or transient neurological complications and subsequent mortality. But even with meticulous attention to cooling and warming techniques, as well as careful monitoring, a duration of HCA exceeding 30 min has been shown to produce symptoms characterized as temporary neurological dysfunction (prolonged disorientation, and Parkinson-like movements) in a significant minority of patients, especially in elderly patients [2].

Earlier, the idea of supplying brain with blood retrograde via the superior vena cava (retrograde cerebral perfusion (RCP)), is supposed to provide not only delivering nutrients to the brain during prolonged HCA but also flushing out possible cerebral emboli. Although it has been applied enthusiastically by a number of clinicians in the past, nowadays many surgeons including Coselli and Safi had to back away from this technique due to the belief of shunting of the blood to internal jugular vein, intercostals veins, cerebral sinuses or venoarterial distribution which results in inadequate perfusion of brain [3,4]. We also believe and apply selective antegrade cerebral perfusion (ACP) with deep HCA (14—18 °C) instead RCP and it provides best cerebral protection in prolonged aortic procedures. With this technique, which allows a number of variations in implementation, some or all of the cerebral vessels are perfused throughout the duration of systemic circulatory arrest, except for very short intervals. The combination of hypothermia with selective ACP has been very successful in providing cerebral protection both in laboratory studies and in clinical practices. Bachet and their associates were among the early clinical pioneers of cold ACP [5]. The advantage of this technique is that it allows a much longer interval of safe circulatory arrest, since the supply of nutrients and oxygen at a relatively low flow allows maintenance of appropriate levels of oxygen metabolism at hypothermic temperatures.

References


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