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Predisposition to decreased $SjvO_2$on cardiac bypass

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Keywords

Cerebral ischaemia, extracorporeal circulation, metabolic disorder, neurologic complication.

Comments

This study shows that the reduction in jugular venous saturations ($SvjO_2$) is greater in patients with pre-existing cerebrovascular disease due to diabetes mellitus (DM) or stroke. This study doesn't answer whether this is clinically important. Despite clinically and statistically different values in $SvjO_2$ (62.2% vs 45.9% [control vs stroke] group 20 min following commencement of cardiopulmonary bypass (CPB) no patient showed any clinical neurological injury. However, this is a small study with only 38 patients overall and not designed to investigate clinical outcome. The results probably reflect altered autoregulation in these patients as other studies have found that patients with DM have a constant cerebral blood flow with increasing temperature. The decrease in $SvjO_2$ indicates increased oxygen extraction and hence may indicate that these patients have less reserve.

Introduction

Central nervous system (CNS) complications are a major cause of morbidity and mortality following cardiac surgery. DM and previous cerebrovascular disease are both common in patients presenting for cardiac surgery and these patients are thought to have a higher risk of neurological damage following surgery. This controlled study examines whether these two factors lead to alterations in $SjvO_2$, when factors affecting cerebral perfusion are maintained within fixed limits.

Methods

- Prospective study with age matched controls in patients undergoing elective coronary artery surgery with CPB

- Nineteen controls, nine with previous stroke and ten with DM
- $SjvO_2$ monitored continuously from induction to end of procedure
- Normothermic CPB used
- $PaCO_2$, haematocrit and mean arterial pressure maintained
- Intraoperative epiaortic scanning to exclude thrombus

Results

There were no cases of postoperative neurological deterioration. $SvjO_2$ decreased significantly in the group with previous DM or cerebrovascular disease at 20 min and 40 min after the start of CPB. This reduction was also significant when compared to the pre-CPB values in these patients. There was no difference between the DM and stroke groups.

References

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