ABSTRACT

TITLE: “Observational study of the effect of beach-chair position on cerebral blood flow in patients undergoing shoulder surgery”

DEPARTMENT: Anaesthesia

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DEGREE & SUBJECT: MD Anaesthesia

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Background:

Shoulder surgeries are done usually in sitting or lateral position depending upon the preference of the operating surgeon. One of the commonly thought positional injury related to the sitting position is decreased cerebral perfusion due to fall in mean arterial blood pressure. Middle cerebral artery blood flow velocity by transcranial doppler is one of the surrogate methods to measure cerebral blood flow. The purpose of the study is to find about the correlation between the range of mean blood pressure fall and the cerebral blood flow (middle cerebral artery blood flow velocity). Indirectly we can derive how much drop in the mean blood pressure can be allowed and still maintain a good cerebral flow for an individual patient.
Methods:

An observational study was conducted in the department of Anaesthesia in the Christian Medical College, Vellore from January 2015 to June 2016. All consenting patients who underwent shoulder surgeries in sitting position were included in the study according to the inclusion and exclusion criteria. Standard general anesthesia was given to all patients. In addition to pulse oximetry and electrocardiogram, invasive arterial blood pressure was monitored. Baseline value of middle cerebral artery blood flow velocity is measured by transcranial Doppler before and after induction in supine. After patient is positioned in beach chair position arterial blood pressure was read at the level of the tragus. Doppler was repeated in whenever there was hypotension and after treating it. The percentage reduction in mean arterial blood pressure and the middle cerebral artery blood flow velocity were compared.

Results:

Twenty patients were recruited for the study. The mean age was 38 years. There were 15% ASA II patients and 85% were ASA I. The reduction in the mean arterial pressure was 25% and middle cerebral artery blood flow velocity was 27.9% (p<0.001). Except for the 6 patients who were overzealously treated after hypotension, an average of 73.41mmHg of the mean arterial pressure was required to maintain the middle cerebral artery blood flow velocity, thereby cerebral perfusion.
**Conclusion:**

There are statistically significant changes in mean arterial pressure and middle cerebral artery blood flow velocity. It was concluded that an average of 73.41mmHg is the minimum mean arterial pressure required to maintain cerebral perfusion.

Keywords: beach – chair, sitting, transcranial Doppler, middle cerebral artery, blood flow velocity