Reversed Cushing Phenomenon, While Decompression Surgery in Increased Intracranial Pressure Patients

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Introduction

Increased intracranial pressure (IICP) elicits Cushing response in vital signs: hypertension, bradycardia, and respiratory irregularities. Therefore theoretically, it is expected that decreased ICP due to decompressive craniectomy for uncontrolled IICP can restore systemic blood pressure and pulse rate. Because this issue has not been previously studied, authors' were prospectively designed to investigate the influence of decompressive craniectomy on systemic arterial blood pressure and pulse rate.

Methods

45 patients who had taken decompressive craniectomy to prevent uncontrollable intracranial hypertension were included in this study. These patients' vital signs were monitored during the decompression surgery. All of these patients were under general anesthesia, respiration and body temperature were maintained in a steady state. Systemic mean arterial blood pressure and pulse rate were compared before and after the craniectomy with 2 minutes intervals. Data from 20 minutes before and 30 minutes after the decompressive craniectomy were collected and compared by unpaired sample t-test.

Results

The intracranial pressure was decreased from 42.6 ? 19.4 to 6.8 ? 7.5 cmH2O, and mean arterial blood pressure was decreased from 89.3 ? 15.2 to 72.3 ? 9.4 mmHg, after the decompressive craniectomy ($P<0.05$). the pulse rate was not changed significantly ($P>0.05$). These decreased mean arterial pressures were spontaneously restored about 20 minutes after the craniectomy without any intervention. But in 9 patients who had cardiopulmonary problems, there were no correlations between the ICP and mean arterial pressure changes.

Conclusions

Based on our study, we observed that reduced ICP due to decompressive craniectomy for uncontrolled IICP decreased systemic blood pressure for about 20 minutes after the procedure, but didn't influence on the pulse rate. A large number of patients need to determine the robustness and the clinical usefulness of this response.

Learning Objectives

Cushing phenomenon is fixted concept in IICP patients.

The reverse phenomenon could be expected while decompression surgey in IICP patiensts.

References

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