



Biochemical alterations in brain parenchyma in ischemic posttraumatic brain injured : a microdialysis study with prognostic evaluation in TBI patients.

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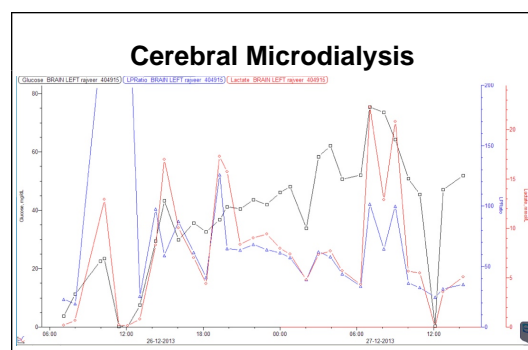
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Introduction

Traumatic brain injury is a major cause of mortality and morbidity. Secondary brain insult occurs as a result of cerebral ischaemia and is preventable. Cerebral microdialysis provides a method of measuring parameters that predict cerebral ischemia before signs and symptoms arise.

Learning Objectives

To study value of cerebral microdialysis in traumatic brain injured : a research or prognostic tool.

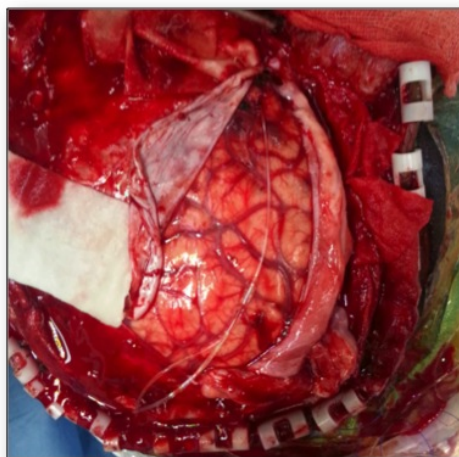


Graphs showing various MD parameters in one of the study patients

Methods

- This is a single center observational study of 19 patients aged between 22 and 45 years (16 males, 3 females) of severe traumatic brain injury at our center from 2013-2014.
- Bilateral catheters were put in two patients who had bilateral contusions.
- All patients underwent decompressive craniectomy with placement of microdialysis catheters in peri-contusional tissue at the time of surgery.
- ICP catheters were placed simultaneously at the time of surgery.
- They were monitored on an hourly basis for a period of 3-5 days.
- Patients were monitored in neurointensive care unit with standard BTF management guidelines.

Intra operative placement



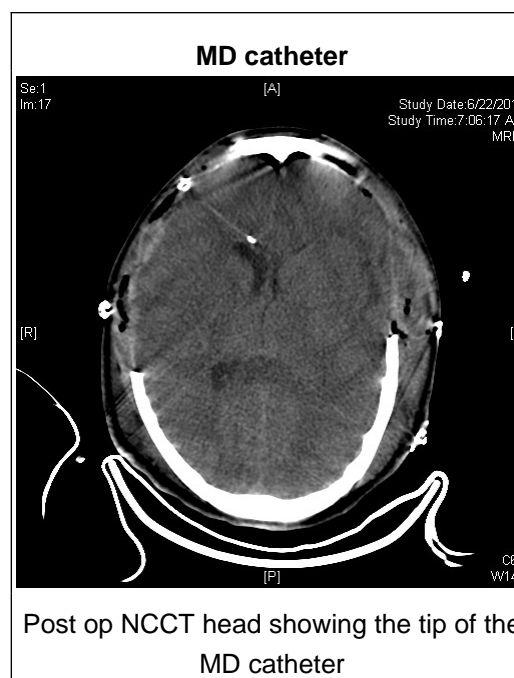
Results

- Average ICP ranged from 3.7 to 29.
- Consistently high LP ratios were seen in peri-contusional tissues with average values ranging from 19.5 to 134.
- Average brain glucose values ranged from 0.5 to 4.2 (Mean 1.7 mmol/l).
- Average brain glycerol values showed maximum variation ranging from 14 to 1395 (Mean 314).
- RBS values ranged from 5.7 to 9.1 mmol/l (102.6 - 164mg%).
- **No significant correlation was found between RBS and cerebral glucose values for pooled glucose (n=1663).**
- Only seven of 21 catheters showed a significant correlation between plasma glucose and MD glucose.

- **Significant correlation noted in LG and LP ratio (Correlation coefficient .846, p=0.000) and between Glycerol and LP ratio (Correlation coefficient .475, p=0.03).**
- Average ICP and motor response(M) showed correlation coefficient of -0.154 but were not statistically significant.
- Other variables i.e. LP ratio, LG ratio, Glucose and Glycerol did not show any significant correlation.

Conclusions

- Cerebral MD variables (glycerol, LG and LP) correlated with one another indicating a consistent metabolic derangement.
- **High blood sugar values didn't correlate with higher brain glucose (? failure of the brain tissue to adequately uptake glucose suggesting ongoing ischaemia).**
- **Better outcome group showed rising brain to blood glucose ratio during the microdialysis period.**



Post op NCCT head showing the tip of the MD catheter

JPNATC



MD catheter

