Anti-epileptic Prophylaxis in Traumatic Brain Injury (TBI) Patients undergoing Craniotomy versus Decompressive Craniectomy Operations A Retrospective Analysis.

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Introduction

Seizure account for significant morbidity and mortality early in the course of Traumatic Brain Injury (TBI). Although there is sufficient literature suggesting benefits of anti-epileptic drugs (AED)s in post-TBI patients for the short term, there has been no study to suggest a time frame for continuing AED in patients who have undergone a decompressive craniectomy for more severe TBI.

Learning Objectives

This study will attempt to find a relationship between seizure rates, treatment time, and complications from post--TBI patients who have undergone hemicraniectomy. Our aim is to find trends in this patient population that may ultimately give more clear guidelines on AED therapy.

Methods

A retrospective analysis was done from 2008 to 2012 for patients who underwent decompressive craniectomy and those who underwent a standard craniotomy operation.

Results

Out of the 160 patients reviewed 85 were included in the study with 52 (61%) craniotomy and 33 (39%) craniectomy patients. The craniotomy group used Phenytoin (Dilantin) 78.8% of the time, Levetiracetam (Keppra) 9.6%, a combination of both 5.8 %, and Topiramate (Topamax) 3.8% of the time. The craniectomy group used Phenytoin 84.8% and Levetiracetam 15.2% of the time without any significant difference between the groups. Craniotomy patients had a 30 day seizure rate of 13.5% compared to 21.2% p = 0.35. The average day of seizure onset from day of surgery was 5.86 for the craniotomy group and a mean of 8.14 days in the craniectomy group. There was no difference in average day of seizure onset between the groups

TABLE 1

	Craniotomy	Craniectomy	P
N	52	33	
Gender			
Male	80.8%	81.8%	0.9
Female	19.2%	18%	0.63
Age	48.4	53.6	0.022
Penetrating	7.7%	6.1%	0.77
Side			
Left	44.2%	42.4%	0.87
Right	48.1%	54.5%	0.56
Bilateral	7.7%	3.0%	0.37
MLS	6.33mm	9.3mm	0.009
Initial GCS	11.67	6.76	< 0.001
Final GCS	13.74	8.24	< 0.001
Anti-epileptics			
Dilantin	78.8 %	84.8 %	0.49
Keppra	9.6 %	15.2 %	0.44
Outcome at day 30			
Seizure	7	11.2 %	0.35
Lost to followup	3	15.2 %	0.79
Death	3.8 %	33.3 %	< 0.001

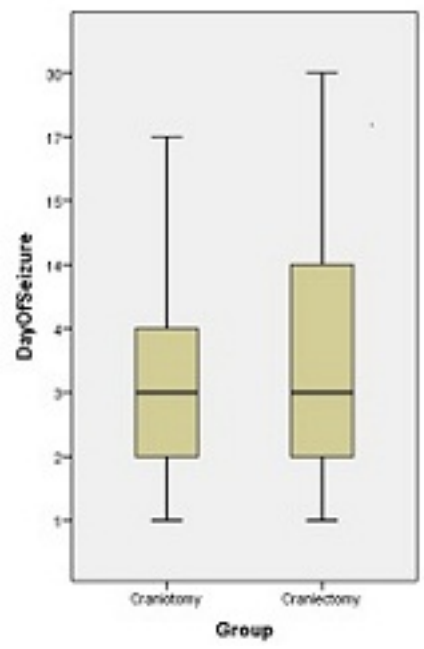
Trends in patient population undergone Craniotomy versus Decompressive Craniectomy.

p = 0.642. The mean hospital duration was 14.52 and 15.73 for the craniotomy and craniectomy groups p = .702.

Conclusions

We found no significant differences between these two groups in terms of timeframe of prophylaxis, indicating that the craniectomy patients can be treated in the same manner as craniotomy patients as it relates to duration of anti-seizure prophylaxis.

Figure 1



Average day of seizure onset for patients in both craniotomy and craniectomy groups, starting from the day of trauma onset. Each bar illustrates the range of days from trauma onset when seizure occurred, with high and low outliers excluded. The black line illustrates the mean day of seizure onset.

References

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