

The incidence of seizures in patients with chronic subdural hematomas treated with burr hole evacuation.

Hermes G. Garcia-Marrero MD; Emil A Pastrana MD; Samuel Estronza-Ojeda MD; Jaime A. Inserni BA, MD, FACS

University of Puerto Rico Medical Sciences Campus

Department of Neurosurgery



#### Introduction

Chronic subdural hematomas (CSDH) are a very common diagnosis in neurosurgical practice for which evacuation with burr holes is an effective surgical option. There is limited data with regards to the associated risk of postoperative seizures in patients with surgically treated CSDH. Anti-epileptic drugs (AEDs) are associated with significant side effects. In this study, we sought to identify the risk of post-operative seizures in patients with chronic subdural hematomas(CSDH) after burr-hole evacuation and the associated clinical and radiological factors.

# **Methods**

A retrospective chart review was performed on patients operated via burr-hole for CSDH in our institution from 2008 to 2010. None of the patients received prophylactic AEDS. The development of post-operative seizures at one year follow-up was identified. Demographic data, comorbidities, initial GCS, maximum hematoma thickness, midline shift and rate or reoperation were obtained and compared between both groups.



Figure: Axial non-contrast CT scan of right CSDH. Maximum hematoma thickness and MLS were measured on all patients.

Table 1: Comparison of Seizing versus Non-Seizing Group\*

Patient Characteristic	Seizing Group (N=5)	Non-Seizing Group (N=215)	P Value
Demographics			
-Age	$50.8 \pm 4.4$	$59.6 \pm 6.4$	0.16
-Gender(M:F)	5:0	5:1	0.33
Co-Morbidities			
-Hypertension	40.0%	38.1%	0.99
-Alzheimer's disease	20.0%	2.8%	0.15
Clinical			
-Pre-Op GCS	$13.2 \pm 0.66$	$13.44 \pm 0.09$	0.74
-CSDH thickness (mm)	$14.6 \pm 2.64$	$18.39 \pm 0.41$	0.052
-MLS (mm)	$4.2 \pm 0.73$	$4.61 \pm 0.19$	0.9

\*GCS: Glasgow Coma Scale; CSDH: chronic subdural hematoma; MLS: midline shift

### Results

A CSDH was evacuated in 220 patients. Post-operative seizures occurred in 2.3% (5/220). The mean time of onset of seizures was 8.4±2.2 days with a median of 7days. There was no prior history of epilepsy in our patients. There was no significant difference in age and gender between seizing and non-seizing groups (P=0.16 and P=0.337, respectively). The most common comorbidity was hypertension; no statistically significant difference between both groups (38.1% non-seizing vs 40% in seizing; P~1). Alzheimer's disease was more common in the seizing group (20%) versus the nonseizing group (2.8%) although no statistical difference was found (P=0.15). GCS scores were similar in both groups (median of 13 on both; P=0.74). There was a trend to smaller CSDH thickness in the seizing group  $(14.6 \pm 2.6 \text{mm})$  versus the non-seizing group  $(18.4 \pm$ 0.41mm), however, no statistically significant difference was found (P = 0.52). The mean midline shift in both groups was similar (4.6±0.19mm non-seizing vs 4.2±0.73mm seizing group). The reoperation rate was 10.9% (24/220). None from the seizing group was reoperated.

## Conclusions

For our series, the incidence of post-operative seizures in patients with CSDH evacuated via burr-holes was low. Prophylactic AEDs should not be routinely administered if no other risk factor for seizure exists. Demographic and clinical factors did not appear to influence on postoperative seizures. There was a tendency for smaller CSDH and increased frequency of Alzheimer's disease in patients that developed seizures however, given the small sample size of patients that had seizures, a statistical difference was not found. Further data on patients that have developed post-operative seizures is needed to better identify risk factors. Findings should not be extrapolated to patients treated with a craniotomy.

#### Learning Objectives

By the conclusion of this session, the participants should know the incidence of post-operative seizures in patients treated with burr hole evacuation for chronic subdural hematomas, determine risk factors associated, as well as determine if prophylactic anti-epileptic drugs are needed peri-operatively.

#### References

-Battaglia F, Lubrano V, Ribeiro-Filho T, Pradel V, Roche PH. Incidence and clinical impact of seizures after surgery for chronic subdural haematoma. Neurochirurgie. 2012 Aug;58(4):230-4 -Ducruet AF, Grobelny BT, Zacharia BE, Hickman ZL, DeRosa PL, Anderson K, Sussman E, Carpenter A, Connolly ES Jr. The surgical management of chronic subdural hematoma. Neurosurg Rev. 2012 Apr;35(2):155-69

-Grobelny BT, Ducruet AF, Zacharia BE, Hickman ZL, Andersen KN, Sussman E, Carpenter A, Connolly ES. Preoperative antiepileptic drug administration and the incidence of postoperative seizures following bur hole-treated chronic subdural hematoma. J Neurosurg. 2009 Dec;111(6):1257-62. -Huang YH, Yang TM, Lin YJ, Tsai NW, Lin WC, Wang HC, Chang WN, Lu CH. Risk factors and outcome of seizures after chronic subdural hematoma. Neurocrit Care. 2011 Apr;14(2):253-9. -Rabinstein AA, Chung SY, Rudzinski LA, Lanzino G. Seizures after evacuation of subdural hematomas: incidence, risk factors, and functional impact. J Neurosurg. 2010 Feb;112(2):455-60 -Yuan D, Zhao J, Liu J, Jiang X, Yuan X. Clinical features of 417 patients with chronic subdural hematoma. Zhong Nan Da Xue Xue Bao Yi Xue Ban. 2013 May;38(5):517-20.