

Introduction

Diffuse axonal injury (DAI) is believed to be caused by acceleration-deceleration forces affecting long white matter tracts that result in reduced level of consciousness following acute traumatic brain injury (TBI). There are scarce studies describing the overall outcomes of DAI and how some clinical factors influence it. The purpose of this study is to determine long term outcome in patients with MRI-proven DAI according to the Extended Glasgow Outcome Score (GOSE.)

Methods

Retrospective review of 149 TBI patients admitted to Ryder Trauma Center from 2004-2014.

Each patient had MRI-proven DAI. Graded using ADAMS score for extensiveness of DAI:

- Grade I involves grey white matter
- Grade II involves corpus callosum
- Grade III involved brainstem

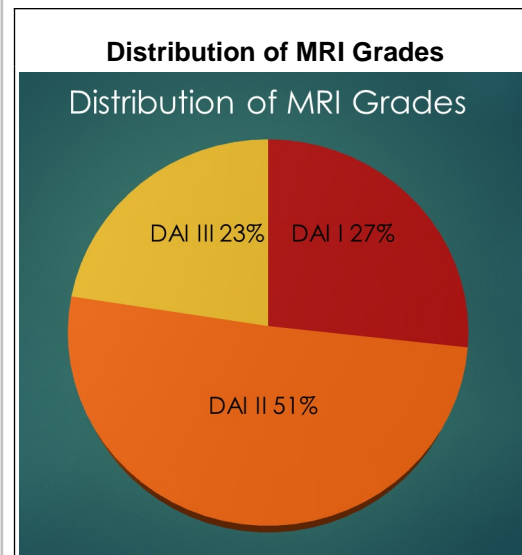
Outcomes were evaluated with Extended Glasgow Outcome Scale (GOSE) which were calculated 6 months following initial injury with phone interview.

GOSE:

1 = Dead 2 = Vegetative State 3 = Low Severe Disability

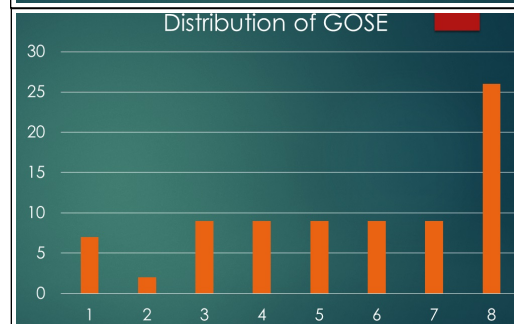
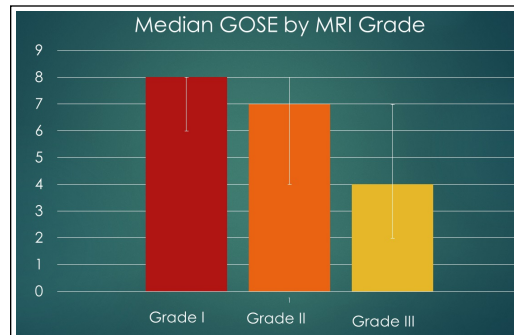
4 = Upper Severe Disability dependent for daily support for mental or physical disability. If left alone for more than 8h at home it is upper level of SD, if not then it is low level of SD.

5 = Low Moderate Disability 6 = Upper Moderate Disability
 some disability ie aphasia, hemiparesis or epilepsy and/or deficits of memory or personality. They are independent at home but dependent outside.
 7 = Low Good Recovery 8 = Upper Good Recovery
 Resumption of normal life with the capacity to work even if pre-injury status has not been achieved.
 If these deficits are not disabling then it is upper level of GR, if disabling then it is lower level of GR.



Results

149 patients were screened, 71 had follow up interview. 67% male, age 33±16 years, ISS 30±11, admission GCS 7±4, with ICU stay of 19.9± 18 days and mortality of 5.6%. Baseline characteristics, including GCS, were similar, except GOSE<4 had significantly longer LOS (p<.001)



The percentage of GOSE <4 in 25.4%, GOSE 4-6 in 25.4% and of GOSE 7-8 in 49.3%.

Summary

74.0% of these patients regained independent functional status at home (GOSE >5).

49.3% returned to functional status (GOSE >7) with the ability to work.

Conclusions

DAI may result in devastating neurological injury but this study demonstrates that a meaningful recovery is possible and that the prognosis may not be as poor as previously believed. Furthermore, this study suggests that either differences in management, comorbidities or different imaging characteristics may influence long term outcomes.

References

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