Prognostic Factors in Adults with Encephalitis: an Analysis of 340 Cases

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Background

- Encephalitis is a serious medical condition with adverse clinical outcomes seen in approximately 50% of afflicted individuals.
- Large and comprehensive studies of encephalitis demographics, etiologies, treatments, and outcomes remains challenging.
- Few studies in general have been done to evaluate any meaningful clinical predictor for poor or positive outcomes.

Objectives

1. Describe the general demographics and most common etiologies of encephalitis.
2. Quantify the most common presentations, exam findings, treatments, and outcomes of encephalitis.
3. Discover meaningful predictors of outcome for encephalitis patients.

Methods

- Study is a retrospective chart review of 340 adult encephalitis cases.
- Charts were derived from 19 different hospitals in the cities of New Orleans, LA and Houston, TX, between the years 2000 and 2017.
- A definition of an adult case was defined as any patient greater than the age of 18.
- A case definition for an encephalitis diagnosis was determined by International Encephalitis Consortium diagnostic criteria:
  - Possible encephalitis case meeting the Major criteria of altered mental status and at least two Minor criteria.
  - Probable or confirmed encephalitis case meeting the Major criteria of altered mental status and at least three Minor criteria.
- Clinical outcome was determined using the Glasgow Outcome Scale (GOS), where, 5 is considered a good recovery, 4 being consistent with moderate disability, 3 with severe disability, 2 with a vegetative state, and 1 with death. Anything that was scored as a 4 or less was defined as an adverse clinical outcome (ACO).

Results

- A total of 340 adults were found to meet inclusion criteria for encephalitis, 71 (21%) with possible and 269 (79%) with probable or confirmed encephalitis.
- An etiology was documented in 151 (44.5% of all cases, 56% of probable cases) with the most common causes being Arboviruses (21.1%), Herpes simplex virus (HSV) (18.5%), and anti-N-methyl-D-aspartate receptor antibody (13.4%).
- An adverse clinical outcome was found to have occurred in 172 out of 322 (53.4%) of the cases.
- On bivariate analysis, factors associated with adverse outcomes were found to be age greater than 65, respiratory failure, admission to the intensive care unit, and abnormal findings on either head CT, brain MRI, or EEG (p<0.05).
- Lack of insurance was surprisingly found to have an association with better outcomes as compared to those with insurance (p<0.001).
- Empirical treatment with antibiotics, antivirals, and steroids were found to be same in both outcome groups.

Discussion

- Missing and inconsistent data within Electronic Health Records is compounded by encephalitis being a complicated disease and diagnosis.
- With greater awareness encephalitis causes and a growing patient population, more appropriate testing and treatment of what is likely a viral etiology can lead to the more apt and accurate care of patients.
- Using these findings, we hope to build better predictive models and continue to find meaningful ways to prevent adverse outcomes.

Limitations and Further Study

- Encephalitis in adults with adverse clinical outcomes in 50% of patients with significant predictors being age, respiratory failure and abnormal imaging of the brain.

Conclusions

References