Alternative Approach to Compliance of Antiepileptics and Its Clinical Meanings

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Object

- Compliance is the key in controlling epilepsy
- Traditional method to estimate compliance of antiepileptic drug (AEDs)
  - Interview or questionnaire
  - Drug level test by saliva, serum, or hair sampling
- Complete medication record could be an alternative approach in estimating AEDs compliance

Materials

- In Taiwan, *National Health Insurance Research Database (NHIRD)* contain complete medication records of every insured person

- NHIRD
  - Out patient service
  - In patient service
  - Contract pharmacy

Materials

- NHIRD cohort sampling

- Population
  - 100,000 persons from 1987 to 2003
- Enrolled criteria (meet both)
  - Epilepsy diagnosis
    - ICD-9CM code 345, 780.3, A-code A225, A469
  - AED treatment

Method

- Independent variables
  - Age
  - Gender
  - Disease duration (DD)
    - Initial date : earliest date of epilepsy diagnosis
    - Final date : the end of study period or the day drop out from health insurance
  - Total AED days during disease (AD)
  - Compliance ratio (CompR) = AD /DD

Method

- Dependent variables
  - Frequency of emergency service (ES) visiting
  - Frequency of admission to hospital
  - Total medical payment
- Compare distribution of gender and age and hospitalization frequency between epileptic and non-epileptic groups
- Multiple regression model for each dependent variables
  - SAS 9.0 Reg procedure
  - Stepwise method

Result

- Study group
  - 993 observations in this diseased group (0.993%)

	Epileptic Group	Non-epileptic Group	Statistical Tests	p Value	Statistical Significance
Gender(F/M) in %	43/57	49/51	Chi-Square Test	0.055	Negative
Age	49±24	38±21	T-Test	<0.0001	Positive
Hospitalization Frequency	2.99	0.76	T-Test	<0.0001	Positive

Result

- Admission frequency = 0.57 +
  0.028 x age – 0.001 x AED days + 5.39 x CompR
  - Model R square = 0.0798

- Total medical payment = - 42142 +
  3614 x age + 496823 x CompR
  - Model R square = 0.1347

- Emergency service visits = 0.39 +
  0.0003 x AED days
  - Model R square = 0.0359

Conclusion

- Epileptic patients : older and more admission to hospital

- In epileptic patients
  - Aging more admission and more medical payment
  - More AED, less admission
  - Good AED compliance no guarantee of less hospitalization and ES visiting

Discussion

- More admission and more payment
  - = more severe and more care
  - = better compliance

- Limitation
  - Short study period in life-long disease such as epilepsy
  - Diversity of cause of admission and ES visiting

Future Application

- Correlate this compliance result with traditional drug level monitoring
- Further analysis in correlation of compliance with frequency of medication
- Study in compliance of medication for chronic diseases and correlate with outcome

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