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Clinical features and predictors of seizure recurrence in older persons with first ever seizure

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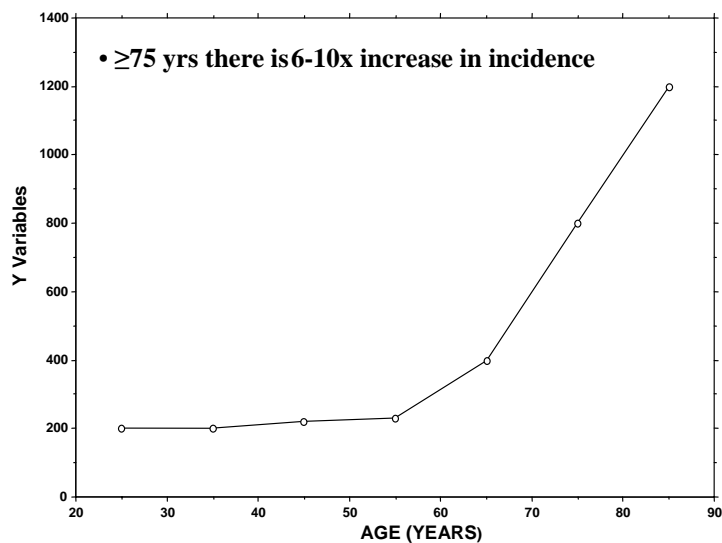
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Introduction

- Over the past decade, there has been increasing recognition of the high incidence of epilepsy in the elderly
- This is thought to be primarily the result of the increased prevalence of cerebrovascular disease in this population

Age and incidence of epilepsy

• 30% of new cases of epilepsy are >65 yrs old



- Most new seizures in older patients are partial in onset with or without secondary generalisation
- Seizures in this population can easily go unrecognised due to their diverse presentations, however the impact of late onset epilepsy in the elderly is significant

- Determining when and how to treat epilepsy in this population involves consideration of many variables.
- Anticonvulsant side-effects and their cost, must be weighed against seizure related injury and loss of independence
- No prospective studies to date have specifically examined the risk of seizure recurrence in the elderly

Study Aim

- To examine the characteristics of patients aged 60 years or older presenting with first ever seizure, and to prospectively determine the rate of seizure recurrence in this group

Methodology

- A first seizure clinic was established in 1999 at Royal Perth Hospital and Fremantle Hospital to assess patients with first ever seizure.
- The majority were seen as outpatients after referral from the emergency department or their GP. Patients were also seen after hospital admission, as ward referrals

Methodology

- All patients underwent a full neurological examination and review by one of two epileptologists, as well as having a standardised questionnaire completed, containing demographic data, details of the seizure and risk factors for epilepsy
- The majority of patients had neuro-imaging and EEG performed as part of their assessment

Methodology

- For the purposes of this study, we prospectively analysed all patients aged 60 years or older at time of referral, between 31st December 1999 and 31st December 2003.
- Patients were followed up in clinic, by phone and using notes, with a final review completed by 31.03.2004

Methodology

- Seizure aetiology was classified as idiopathic, remote symptomatic or provoked according to published criteria.
- The clinical, EEG and neuro-imaging findings were compiled and compared with the remainder of patients aged under 60 years

Methodology

- Seizure type was classified as partial, generalised or unclassified according to published criteria
- Univariate factors predictive of recurrence were assessed using Wilcoxon rank sum test for continuous variables and Fisher exact test for categorical variables
- Multivariate logistics regression analysis was used to determine independent predictors of seizure recurrence

DEFINITIONS: Seizure Aetiology

- **Idiopathic:** no obvious cause
- **Remote symptomatic:** due to previous but not acute cerebral insult
- **Provoked:** seizure(s) occurring in close temporal association with an acute systemic, metabolic or toxic insult or in association with an acute CNS insult (within 7 days)
- (Guidelines for Epidemiologic Studies on Epilepsy, Commission on Epidemiology and Prognosis, International League against Epilepsy)

RESULTS

RESULTS

- From an initial cohort of 1004 patients, 105 (10%) were identified as being 60 years or older at presentation
- Of this group, 24 patients referred were on subsequent analysis determined not to have suffered an epileptic seizure (20 of these had a syncopal event)
- During the period of follow-up, 13 patients had died (12%)

RESULTS

- Of the 81 patients found to have had an epileptic seizure, 16 (20%) were found to have had a past history of epilepsy (either untreated or undiagnosed). These patients were excluded from further analysis
- This left 65 patients with a first ever seizure at age 60 years or over, who were analysed

RESULTS : Demographics

- Two thirds of our patients were male (68%)
- The majority of patients had both neuro-imaging and EEG analysis during the work-up for their seizure (97% and 92% respectively)
- The average age was 72 years (median 70 years, range 91-60 years)
- The most common seizure type was **partial** in onset (52/65, 80%)

RESULTS : Seizure Aetiology

- 46% of our patients had a **remote symptomatic** aetiology as the cause of their seizure. The majority of these cases (63%) were due to stroke
- 15% of patients had a provoking factor to their seizure, a much lower rate than in our younger patients (28%)

Aetiology of First Seizure in Older Patient Group (N=65)

- **Idiopathic 25 (38%)**
- **Remote symptomatic 30 (46%)**
- Stroke 19
- Neoplasm 6
- Dementia 3
- Small v. Ischaemia 2
- **Provoked 10 (15%)**
- Stroke 4
- Metabolic 1
- Head injury 1
- Alcohol 1
- Drugs (fentanyl) 2
- Infection (HSV) 1

RESULTS: Seizure Recurrence

- Recurrent seizures occurred in 54% (35/65) of the older cohort during the follow-up period.
- **Median time** to second seizure was **95 days**, range 1 to 827 days

Results

- Within this population, patients with a remote symptomatic aetiology were more than **twice as likely** to suffer a seizure recurrence

Table 2: Characteristics of Recurrent vs Non-recurrent Seizure Patients

	Recurrent seizure (n=35)	No recurrence (n=30)	P value
Remote (%) symptomatic	63%	27%	0.005
Idiopathic	29%	50%	0.12
Provoked	9%	23%	0.16
EEG Epileptiform	38%	21%	0.25
Neuroimaging abnormal	76%	60%	0.27
Gender (male)	77%	57%	0.11

Age as a risk factor for Recurrence

- There was no significant difference between the two groups according to age (p=0.40 Wilcoxon rank sum test)
- However, on analysis of the entire cohort, increased age was found to be a risk factor for seizure recurrence (p=0.012, Wilcoxon rank sum test)

Results

- On uni-variate and multi-variate analysis, the only factor found predictive of recurrent seizure was **remote symptomatic** aetiology.
- There was **no statistical difference** between the groups in terms of anticonvulsant use at time of clinic review (21/35 vs 14/30, 60% vs 47%, p=0.32)

RESULTS: Comparison With Younger Group

- When compared with patients younger than 60 years, the older cohort was more than twice as likely to have a remote symptomatic aetiology, whilst provoked seizures were much less common
- Epileptiform abnormalities on EEG were significantly more common in the older population, as were neuroimaging abnormalities (CT or MRI)

Table 3: Univariate Analysis of Older vs Younger Patients with First Ever Seizure

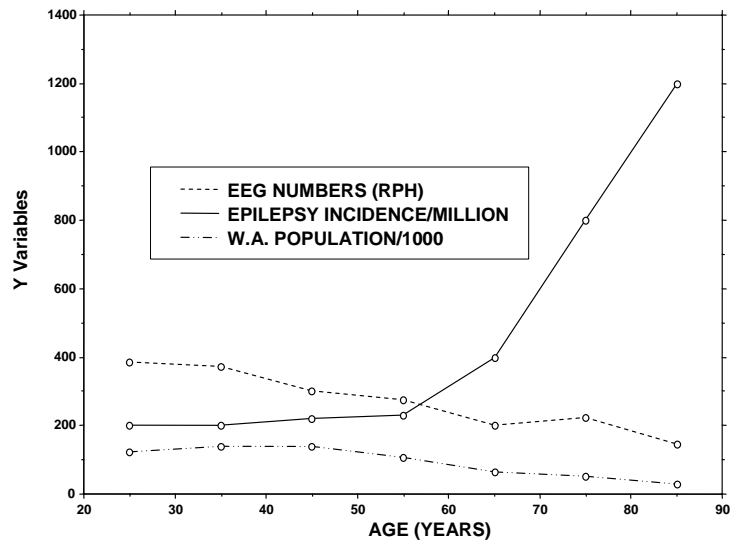
	< 60 years	> 60 years	P value
Gender (male)	66%	68%	0.88
Recurrence (Y)	39%	54%	0.02
Provoked	28%	15%	0.03
Remote symptomatic	18%	46%	<0.001
Neuroimaging Abnormal	25%	68%	<0.001
Epileptiform EEG	17%	30%	0.02

DISCUSSION

Summary

- Epilepsy remains an important diagnosis to consider in those older patients with unexplained neurological events. The well documented high prevalence of partial onset seizure in this group means it may present in many subtle forms.
- It appears that we may be under-investigating the group at highest risk for this condition, given the known increased incidence with age.

Age and incidence of epilepsy



Summary

- It is likely with advances in diagnostic techniques and increased recognition of this condition we will treat more elderly epileptics in the future.
- The recent increase in newer anti-convulsants, which are better tolerated and have less drug interactions in the older population, may make this task easier

Key Points

- Our study has revealed a high rate of recurrence after first seizure in the older population (54% vs 39% in younger patients).
- The risk is greatest in those with a remote symptomatic aetiology (73%), and this appears to be the only independent predictor of recurrence within this group.

Key Points

- *It would thus appear appropriate to consider treating first ever seizure in older patients who have a remote symptomatic aetiology (eg stroke), in light of these findings*

THANK YOU

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