The present study investigated the gender differences in medial temporal lobe epilepsy (MTLE) with regard to clinical history, seizure semiology, and EEG data. To avoid the influence of pathological and localisation differences, we included only MTLE patients with hippocampal sclerosis. Patients who had long term video EEG recordings with registered seizures and unilateral hippocampal sclerosis proved by high resolution MRI were included. There were 153 patients (86 women and 67 men) who met our inclusion criteria. The mean age of the patients was 33.5 years (range 16–59). The mean age at epilepsy onset was 10.8 years. Although there were more women than men, this difference was not significant (p=0.15). We found that male patients experienced generalised seizures significantly more often, and isolated auras significantly less often than female patients. Analysing EEG data, we found that a seizure pattern lateralised to the side of the hippocampal sclerosis occurred more often in female patients. In the logistic regression analysis, we found that all three factors were associated independently with gender. Odds ratio (OR) for female gender in patients with generalised seizures was 0.44 (95% confidence interval (95% CI) 0.21 to 0.92; p<0.05). In patients with isolated auras OR for female gender was 2.1 (95% CI 1.1 to 4.2; p<0.05). OR for female gender in patients with lateralised seizure pattern was 8.8 (95% CI 1.8 to 42.7; p<0.01). Men more often had secondarily generalised tonic–clonic seizures, while women had isolated auras and lateralised EEG seizure pattern more often. Our data suggest that the seizure spread is more extended or occurs more frequently in men than in women.

The incidence and prevalence of epilepsy and the risk for the first unprovoked seizure is higher in men than in women, which seems true even after the higher incidence of epilepsy risk factors in males is taken into account.1 Although there are some data to indicate that the epilepsies of men and of women are different in some aspects, little is known about gender differences in the whole clinical picture. Sexual auras are more frequent in women than in men,2 while men may be more vulnerable to seizure associated brain damage.3

The present study investigated the gender differences in temporal lobe epilepsy (TLE) with regard to clinical history, seizure semiology, and EEG data. To avoid the influence of pathological and localisation differences, we included only patients suffering from medial TLE (MTLE). MTLE accompanied by hippocampal sclerosis (HS) is a unique, homogenous epilepsy syndrome; moreover, it is the most frequent chronic focal epilepsy.4 Gender differences can be clearly investigated in MTLE, a homogenous focal epilepsy syndrome, as these patients have the same pathology in the same location.
axis of the hippocampus were made, giving adequate delineation of the temporal lobes.

**Statistical methods**

For statistical analysis of categorical data, χ² and Fisher’s exact tests were carried out. For continuous variables, Mann-Whitney U test was performed. In order to establish the variables that are associated independently with gender, a stepwise forward logistic regression analysis was designed for all variables.

**RESULTS**

There were 153 patients (86 women and 67 men) who met our inclusion criteria. The mean age of the patients was 33.5 years (range 16–59). In 69 patients, the HS was on the right side, and in 84 patients on the left. Although there were more women than men, this difference was not significant (p = 0.15, binomial test).

The mean age at epilepsy onset was 10.8 years. In the 84 patients with left sided HS, epilepsy began at a mean (SD) age of 10.7 (8) in women and 9.8 (8) in men. In the 69 patients with right sided HS, epilepsy started at 11.1 (9) years of age in women and 12.0 (8) years in men. These differences were not significant.

We found no difference in the two sexes for general epileptological data and clinical history (see table 1). Concerning seizure semiology and characteristics, we found that male patients experienced generalised seizures significantly more often, and isolated auras significantly less often than female patients. Analysing EEG data, we found that a seizure pattern lateralised to the side of the hippocampal sclerosis occurred more often in female patients (see table 1).

In the logistic regression analysis, we found that all three factors were associated independently with gender. Odds ratio (OR) for female gender in patients with generalised seizures was 0.44 (95% confidence interval (CI) 0.21 to 0.92; p<0.05), for isolated auras 2.1 (95% CI 1.1 to 4.2; p<0.05), and for lateralised seizure pattern 8.8 (95% CI 1.8 to 42.7). The latter CI was relatively wide owing to the small number of patients with non-lateralised seizure pattern; however, this difference was also significant (p<0.01).

**DISCUSSION**

The main result of our study investigating gender differences in patients with MTLE was that men more frequently experienced secondarily generalised tonic–clonic seizures, while women had isolated auras and lateralised EEG seizure pattern more often.

Recently, Doherty et al found that in men with right sided epilepsy, seizures began earlier than in those with left sided discharges, whereas women showed the opposite trend. We did not find such a difference, but our population was smaller. Conversely, we studied a homogenous epilepsy syndrome, while Doherty et al included mixed epilepsy syndromes with various aetiology.

A PET study found that men with MTLE had ipsilateral frontal hypometabolism more frequently and contralateral hypometabolism less frequently compared with women. Because PET hypometabolism may be related to seizure spread, these data may also suggest that seizures may spread in different patterns in men than in women. Consequently, our findings showing that secondarily generalised seizures occurred more frequently, while isolated auras appeared less frequently in men suggest that seizure propagation in men is different or more widespread than in women. Our observation of a lateralised EEG seizure pattern seen more often in women than in men also supports this interpretation.

The assumption that seizures in men show more or different propagation than in women is in agreement with other human and experimental studies. Although the hippocampus ipsilateral to the seizure focus in MTLE is smaller in both genders equally, the hippocampus contralateral to the seizure onset is more affected in men than in women. The atrophy of the contralateral hippocampus is thought to be associated with seizure associated brain damage. This may suggest that in men the seizure spread is more extended. Animal models of MTLE using pilocarpin and kainic acid indicate that males are more susceptible to TLE than females. Moreover, temporal lobe seizures in male animals are more severe than in female animals. These gender differences may be related to the testosterone level.

The main limitation of this study is its retrospective nature, especially regarding the anamnestic data. However, our study may facilitate future prospective studies investigating clinical gender differences in epilepsy.

**ACKNOWLEDGEMENTS**

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**Table 1 General data, clinical history, seizure semiology, and EEG data of patients**

<table>
<thead>
<tr>
<th>Variable</th>
<th>All patients (n = 153)</th>
<th>Men (n = 67)</th>
<th>Women (n = 86)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at onset (years)*</td>
<td>10.8 (8)</td>
<td>10.8 (8)</td>
<td>10.8 (8)</td>
<td>NS</td>
</tr>
<tr>
<td>Duration of epilepsy (years)*</td>
<td>22.6 (11)</td>
<td>22.1 (11)</td>
<td>23 (11)</td>
<td>NS</td>
</tr>
<tr>
<td>History of febrile seizures</td>
<td>91 (59%)</td>
<td>39 (58%)</td>
<td>52 (60%)</td>
<td>NS</td>
</tr>
<tr>
<td>Family history of epilepsy</td>
<td>11 (7%)</td>
<td>6 (9%)</td>
<td>5 (6%)</td>
<td>NS</td>
</tr>
<tr>
<td>Left hippocampal sclerosis</td>
<td>84 (55%)</td>
<td>36 (54%)</td>
<td>48 (56%)</td>
<td>NS</td>
</tr>
<tr>
<td>Monthly number of seizures, mean (SD) (median)</td>
<td>8.9 (15)</td>
<td>9.4 (18)</td>
<td>8.5 (13)</td>
<td>NS</td>
</tr>
<tr>
<td>Aura</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>None</td>
<td>14 (9%)</td>
<td>9 (13%)</td>
<td>5 (6%)</td>
<td>NS</td>
</tr>
<tr>
<td>Isolated</td>
<td>83 (54%)</td>
<td>30 (43%)</td>
<td>53 (62%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Abdominal</td>
<td>98 (64%)</td>
<td>39 (58%)</td>
<td>59 (69%)</td>
<td>NS</td>
</tr>
<tr>
<td>Psychic</td>
<td>43 (28%)</td>
<td>16 (24%)</td>
<td>27 (31%)</td>
<td>NS</td>
</tr>
<tr>
<td>Ciliary</td>
<td>5 (3%)</td>
<td>2 (3%)</td>
<td>3 (3%)</td>
<td>NS</td>
</tr>
<tr>
<td>Auditory</td>
<td>4 (3%)</td>
<td>2 (3%)</td>
<td>2 (2%)</td>
<td>NS</td>
</tr>
<tr>
<td>Complex partial seizures</td>
<td>153 (100%)</td>
<td>67 (100%)</td>
<td>86 (100%)</td>
<td>NS</td>
</tr>
<tr>
<td>Seizures</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Secondarily generalised seizures</td>
<td>97 (63%)</td>
<td>49 (73%)</td>
<td>48 (56%)</td>
<td>0.03</td>
</tr>
<tr>
<td>Oral automatisms</td>
<td>115 (75%)</td>
<td>48 (71%)</td>
<td>67 (78%)</td>
<td>NS</td>
</tr>
<tr>
<td>Dystonic posturing</td>
<td>66 (43%)</td>
<td>29 (43%)</td>
<td>37 (43%)</td>
<td>NS</td>
</tr>
<tr>
<td>Ictal speech</td>
<td>24 (16%)</td>
<td>8 (12%)</td>
<td>16 (19%)</td>
<td>NS</td>
</tr>
<tr>
<td>Postictal aphasia</td>
<td>43 (28%)</td>
<td>17 (25%)</td>
<td>26 (30%)</td>
<td>NS</td>
</tr>
<tr>
<td>Seizure pattern lateralised to the side of hippocampal sclerosis</td>
<td>140 (92%)</td>
<td>56 (84%)</td>
<td>84 (98%) &lt;0.01</td>
<td></td>
</tr>
<tr>
<td>Presence of contralateral seizure pattern</td>
<td>11 (7%)</td>
<td>6 (9%)</td>
<td>5 (6%)</td>
<td>NS</td>
</tr>
<tr>
<td>Bilateral independent interictal epileptiform discharges</td>
<td>43 (28%)</td>
<td>20 (30%)</td>
<td>23 (27%)</td>
<td>NS</td>
</tr>
</tbody>
</table>

*Mean (SD).
An unusual case of thigh adductor weakness: obturator nerve ganglion

A 34-year-old old sportsman suffered from thigh adduction weakness and moderate adductor muscle atrophy with unspecific pain at the pelvic region. After deterioration of the symptoms and exclusion of muscle lesion by ultrasound, neurological examination and EMG diagnosed an isolated obturator motor neuropathy. A tumour measuring 3×2×1.5 cm was detected by MRI and sonographically with FLAIR sequences with fludeoxyglucose F 18 reflects prior seizure types in patients with mesial temporal lobe seizures. Arch Neurol 1997;54:129–36.

Nerve stimulation at the level of tumour resection revealed contractility of all the adductor muscles. Immobilisation of the thigh (preventing abduction and external rotation) was advised for three weeks and forced muscle training started not earlier than six weeks after the surgery to allow sufficient pectineous muscle reattachment. After intensive rehabilitation the adductor muscles regained normal clinical function verified by EMG at four month follow up.

Obturators neuropathy due to a ganglion is a rare entity that requires a continuing investigation to verify the exact diagnosis. In addition to a complete neurological examination, colour Doppler ultrasound, MRI, EMG, and eventually fine needle aspiration biopsy are usually required to confirm the diagnosis. Surgical treatment is usually successful when performed early, but when diagnosis is delayed, tumour growth may cause irreversible axonal injury and muscle palsy. This report illustrates the importance of timely diagnosis and treatment of a seldom case of obturator neuropathy.1–5

REFERENCES

Medial temporal lobe epilepsy: gender differences

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