Original article

Epileptic Disord 2013; 15 (3): 263-71

Self-reported quality of life in pharmacoresistant temporal lobe epilepsy: correlation with clinical variables and memory evaluation

Mario Arturo Alonso-Vanegas [1,2,a], José Miguel Cisneros-Franco [2,3,a], Carlos Castillo-Montoya [2], Alma Rosa Martínez-Rosas [4], María Esther Gómez-Pérez [4], Francisco Rubio-Donnadieu [2]

[1] Centro Neurológico, Hospital ABC, Santa Fe
[2] Programa Prioritario de Epilepsia, Instituto Nacional de Neurología y Neurocirugía, Mexico City
[3] McGill University Integrated Program in Neuroscience, Montreal, Canada
[4] Unidad de Cognición y Conducta, Instituto Nacional de Neurología y Neurocirugía, Mexico City, Mexico
[a] These authors contributed equally to this work, and are listed alphabetically.

Received September 24, 2012; Accepted May 29, 2013

ABSTRACT – *Aim*. This work explores the effects of clinical variables on self-reported quality of life (QoL) in pharmacoresistant temporal lobe epilepsy (TLE), correlating this information with results from the Quality of Life in Epilepsy questionnaire (QOLIE-31) and selective memory tests of the Barcelona Battery and the Rey-Osterrieth figure. *Methods*. We retrospectively analysed the records of 60 TLE patients and correlated patient variables (*e.g.* gender, aetiology; mesial TLE with hippocampal sclerosis [HS] *versus* lesional TLE, side of ictal onset, age, age at onset, duration of epilepsy, seizure frequency, and use of AEDs) with selective memory test scores and self-reported QoL. *Results*. Right ictal onset was associated with lower emotional well-being scores. MTLE-HS patients had lower QOLIE-31 scores for seizure worry, social function, overall QoL, energy/fatigue, cognitive function, and obtained a lower overall score, compared to those with lesional TLE. Older age at epilepsy onset was associated with worse emotional well-being, energy/fatigue, medication effects, and seizure worry outcomes. Higher seizure frequency and older age at time of evaluation were associated with lower cognitive function scores. Generalised seizures were associated with lower scores based on the variables: seizure worry, overall quality of life, emotional well-being, and cognitive function. Regarding memory tests, only visuospatial memory correlated positively with cognitive function score. Patients with MTLE-HS underwent evaluation for pharmacoresistant epilepsy, on average, 10 years later than those with

Correspondence:
Mario Arturo Alonso Vanegas
Programa Prioritario de Epilepsia,
Instituto Nacional de Neurología y Neurocirugía,
Insurgentes sur 3877 col. La Fama,
Tlalpan, México D.F., CP 14269
<alonsovanegasm@gmail.com>

doi:10.1684/epd.2013.0590

lesional TLE. *Conclusions*. MTLE-HS, right-sided epileptogenic zone, late onset, and higher seizure frequency were associated with worse QoL. Objective testing revealed specific memory deficits that were not reflected in self-reported QoL scores.

Key words: quality of life, neuropsychological assessment, hippocampal sclerosis, temporal lobe epilepsy, memory disorders, pharmacoresistant epilepsy

Up to 90% of patients with temporal lobe epilepsy (TLE) are pharmacoresistant despite correct prescription and use of antiepileptic drugs (AEDs) (Schmidt and Stavem, 2009), and are thus prone to higher rates of affective disorders, unemployment, dependence, social isolation, and a poor quality of life (QoL) (Suurmeijer *et al*., 2001; Getz *et al*., 2003). Unfortunately, most physicians (specialists and non-specialists alike) lack the time and specific training to address the psychosocial aspects of the disease (Gumnit, 2010).

Patients with mesial TLE with hippocampal sclerosis (MTLE-HS) present with a worse QoL than those with lesional TLE (Elsharkawy *et al*., 2009) (*i.e*. epilepsy secondary to tumours, cavernous malformations, cortical dysplasias, trauma or stroke). Regarding the hemispheric side of ictal onset, TLE patients with left-sided epileptogenic zones score lower on the Quality of Life in Epilepsy questionnaire (QOLIE-31) (Andelman *et al*., 2001). Some studies show that gender influences self perception of QoL; women report a better physical component (Leidy *et al*., 1999) but a marked increase in seizure worry (Djibuti and Shakarishvili, 2003). Other patient variables that are often reported in clinical studies include age at onset and seizure type, however, correlation with QoL is, surprisingly, rarely investigated (Baker *et al*., 1998; Loring *et al*., 2004; Rivera *et al*., 2005; Szaflarski *et al*., 2006). Other factors associated with low QOLIE-31 scores are: older age (Djibuti and Shakarishvili, 2003), a low level of education (Djibuti and Shakarishvili, 2003), long duration of illness (Djibuti and Shakarishvili, 2003; Edefonti *et al*., 2011; Gordon-Perue *et al*., 2011), high seizure frequency (Rivera *et al*., 2005; Phabphal *et al*., 2009), and polytherapy (Rivera *et al*., 2005).

The aforementioned data is derived from studies from a variety of different nations and based on diverse populations. In order to achieve a better understanding of TLE in our patients, and consequently improve patient management, we sought to identify the main factors associated with clinical and psychological status. We therefore developed the present study with two aims in mind: (1) to assess the effects of different clinical variables on self-reported quality of life in patients with pharmacoresistant TLE measured by QOLIE-31; and (2) to correlate patient QOLIE-31 scores with selective memory-related neuropsychological findings.

Methods

A cross-sectional, observational, correlative, and descriptive study was performed based on patients attending the Outpatient Epilepsy Clinic, Instituto Nacional de Neurología y Neurocirugía 'Manuel Velasco Suárez', Mexico. The study was approved by the Institutional Review Board.

We analysed data from 60 consecutive pharmacoresistant TLE patients, evaluated between 2007 and 2010, based on neuropsychological assessment comprising QOLIE-31, selected items of the Barcelona Test, and the Rey-Osterrieth figure. All patients had been evaluated as part of a presurgical workup and were eventually scheduled for epilepsy surgery. Demographic variables included gender and age. Clinical variables included age, age at epilepsy onset, duration of epilepsy, duration of pharmacoresistance, monthly seizure frequency, number of days with seizures per month, number of AEDs, number of different life-long therapeutic trials, seizure type, aetiology (MTLE-HS or TLE with structural lesions), and side of ictal onset.

Instruments

QOLIE-31

In our Cognition and Behavior Clinic, the self-administered QOLIE-31 inventory (Cramer *et al*., 1998) is given to patients whose physical and mental status allows them to understand and answer it. This questionnaire yields scores in seven subdomains: seizure worry, overall QoL, emotional well-being, energy-fatigue, cognitive functioning, medication effects, and social functioning, with an overall score (Vickrey, 1993). For every domain, a lower score refers to a lower quality of life.

Neuropsychological evaluation

Since the main cognitive feature assessed by QOLIE-31 is memory, we selected ten items from the neuropsychological evaluation (Martinez-Rosas *et al*., 2007). Eight of these items were taken from the Barcelona Test (direct digits, reverse digits, semantic fluency, logical memory immediate free recall, logical memory

immediate cue recall, logical memory delayed recall, logical memory delayed cue recall, and delayed visuospatial memory) (Peña-Casanova, 1991), and two from the Rey-Osterrieth figure (Rey, 1941; Osterrieth, 1944). In order to obtain meaningful comparisons, every effort was made to perform the assessment at similar points during the clinical evaluation. All neuropsychological and QoL evaluations were carried out by the same neuropsychologist. Given the high demand for healthcare assistance at our institution and the fact that many subtests of the Wechsler Adult Intelligence Scale (WAIS) are affected by schooling, together with consistent low IQ scores due to the educational/cultural characteristics of the population, we discontinued routine evaluation of IQ. However, it should be noted that there was a certain selection, as patients with impaired verbal comprehension were not considered for QoL assessment. Patients who had had a seizure during the 24 hours prior to examination were rescheduled.

Statistical analysis

Descriptive and inferential analyses were made with the Statistical Package for Social Sciences (SPSS) software, version 17.0, using a 95% confidence interval in all cases. Student's t-test was used to investigate the effect of dichotomic variables (aetiology, gender, and side of ictal onset) on QOLIE-31 scores. The Pearson correlation was calculated to evaluate associations between scalar patient variables (age, age at onset, duration of epilepsy, duration of drug-resistance, monthly seizure frequency, number of days with seizures per month, number of AEDs, and number of different life-long therapeutic trials) and QOLIE-31 scores (the seven subscores, the overall score, and the response to the indicative question 31). Spearman's Rho correlation coefficient was used to determine associations between QOLIE-31 scores and (a) seizure type and (b) each of the 10 items used for memory testing.

Results

Descriptive statistics

Sixty consecutive patients evaluated for epilepsy surgery were considered for this study; 27 females (45%) and 33 males (55%), aged 18-55 years (mean±SD=34.4±9.5 years). The most common seizures were dyscognitive (92% of patients), followed by simple partial seizures (52%), and secondary generalised seizures (37%). The side of ictal onset was left in 39 patients (65%) and right in 21 (35%). See *table 1* for relevant patient data. QOLIE-31 scores are consigned to *table 2*.

Forty patients had MTLE-HS; 20 females and 20 males. In this group, dyscognitive seizures were also the most common type (95% of patients), followed by simple partial seizures (60%), and secondary generalised seizures (35%). The remaining 20 subjects were diagnosed with lesional TLE. Four of these 20 subjects had dual pathology, *i.e.* MTLE-HS with concurrent

Table 1. Summary of clinical data from TLE patients.

	All patients (*n*=60)			MTLE/HS (*n*=40)			Lesional TLE (*n*=20)		
	F:M 45:55% R:L 35:65%			F:M 50:50% R:L 35:65%			F:M 35:65% R:L 35:65%		
	Range	Mean	SD	Range	Mean	SD	Range	Mean	SD
Age	18-55	34.4	9.5	19-55	36.3	9.8	20-47	30.7	8.1
Age at epilepsy onset	1-35	12.2	10.2	1-35	10.8	9.8	2-34	15.1	10.6
Duration of epilepsy (years)	2-43	22.2	11.7	2-43	25.5	10.3	3-37	15.6	11.6
Duration of DR epilepsy (years)	2-24	10.3	7.6	2-24	11.9	7.6	2-22	8.0	7.4
Seizure frequency (month)	1-45	8.9	9.7	2-45	8.7	8.9	1-38	9.2	11.5
Days with seizures (month)	1-30	6.8	7.0	1-30	7.2	6.7	1-25	6.6	7.2
No. AEDs	1-5	1.1	2.4	1-5	2.8	0.9	1-3	1.7	1.1
Therapeutic trials	1-11	4.6	2.7	2-11	5	2.9	1-8	3.7	2.3

AED: antiepileptic drugs; F: female; M: male; R: right, L: left (side of ictal onset); SD: standard deviation; DR: drug resistant.

Table 2. QOLIE-31 scores and subgroups of TLE patients.

	All patients (*n*=60)			MTLE/HS (*n*=40)			Lesional TLE (*n*=20)		
QOLIE-31	**Range**	**Mean**	**SD**	**Range**	**Mean**	**SD**	**Range**	**Mean**	**SD**
Question 31	0-100	70.2	21.5	0-100	66.6	24.0	60-100	77.0	13.8
SW	0-100	59.5	29.0	0-100	53.7	29.0	24-100	71.1	26.0
OQ	0-95	59.5	19.0	0-83	55.1	19.4	50-95	68.4	15.1
EW	12-100	62.2	22.1	12-100	60.0	21.7	20-92	66.5	22.9
EF	5-100	61.9	21.1	5-95	56.8	21.9	45-100	72.3	15.3
CF	7-100	48.3	20.8	7-80	43.3	18.7	34-100	58.3	21.7
ME	0-100	51.2	29.9	0-100	50.6	29.2	8-100	54.3	32.1
SF	0-100	53.1	27.2	0-85	47.2	26.3	27-100	64.7	25.8
OS	16-94	55.6	17.1	16-75	50.9	16.2	38-94	64.9	15.3

SD: standard deviation; SW: seizure worry; OQ: overall quality of life; EW: emotional well-being; EF: energy/fatigue; CF: cognitive functioning; ME: medication effects; SF: social functioning; OS: overall score.
See *figures 1 and 2* for a graphic comparison relative to aetiology and side of ictal onset, respectively.

structural pathology: cortical dysplasia (two patients) or cavernous malformation (2 patients). The rest of these patients had the following diagnoses: tumour (4 patients), cortical dysplasia (5 patients), cavernous malformation (6 patients), and temporal cyst (1 patient). Their seizure types were: dyscognitive (85%), secondary generalised (40%), and simple partial (35%).

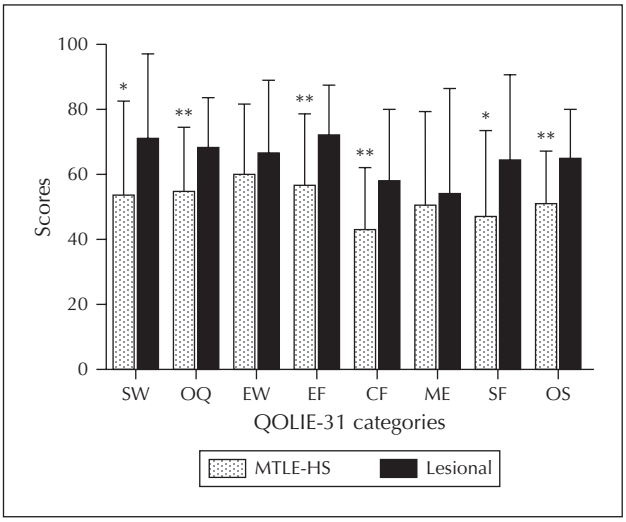

Figure 1. QOLIE-31 scores according to aetiology. QOLIE-31 scores in patients with MTLE-HS (open bars) and lesional TLE (black bars).
Values are expressed as mean±SD.
SW: seizure worry; OQ: overall quality of life; EW: emotional well-being; EF: energy/fatigue; CF: cognitive functioning; ME: medication effects; SF: social functioning; OS: overall score.
*$p<0.05$; **$p<0.01$.

Inferential statistics

The appropriate comparative and correlation analyses were performed first on the whole group of patients (*n*=60) and later for the MTLE-HS subjects (*n*=40). This was possible for the latter group based on the size of sample, common aetiology, and homogenous clinical characteristics.

Aetiology. MTLE-HS subjects scored lower than the lesional group in all seven QOLIE-31 subscores, as well as in the overall score. Group differences were significant for seizure worry, social functioning ($p<0.05$), overall QoL, energy-fatigue, cognitive functioning, and overall score ($p<0.01$) (*figure 1*).

Gender. Women and men did not differ in their QOLIE-31 scores, either for the whole group or for the MTLE-HS subgroup.

Side of ictal onset. When all patients were considered (*n*=60), those with right epileptogenic areas had lower scores in the subdomains for seizure worry, emotional well-being, energy-fatigue, cognitive functioning, medication effects, social functioning, and overall scores. These differences were statistically significant only for the emotional well-being score ($p<0.05$) (*figure 2*). A similar disparity relative to side of ictal onset was found in the MTLE-HS subgroup, although differences did not reach statistical significance.

Type of seizure. Patients with secondary generalised seizures and TLE had significantly lower overall QoL,

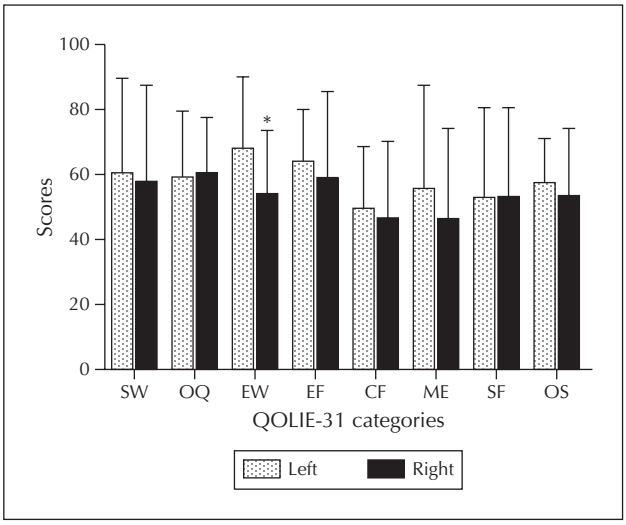

Figure 2. QOLIE-31 scores according side of ictal onset. QOLIE-31 scores in TLE patients with left (open bars) and right (black bars) ictal onset.
Values are expressed as mean±SD.
SW: seizure worry; OQ: overall quality of life; EW: emotional well-being; EF: energy/fatigue; CF: cognitive functioning; ME: medication effects; SF: social functioning; OS: overall score.
*$p<0.05$.

emotional well-being ($p<0.05$), and seizure worry scores ($p<0.01$), whereas MTLE-HS patients with generalised seizures scored lower in cognitive functioning ($p<0.05$) and overall QoL ($p<0.01$).

Clinical data and QoL in TLE. The following clinical data demonstrated a negative (*i.e.* inversely proportional) significant correlation based on QOLIE-31 scores: (1) age, number of days per month with seizures, and seizure frequency with cognitive functioning; (2) age at epilepsy onset with seizure worry, emotional well-being, energy fatigue, and medication effects; and (3) number of AEDs with emotional well-being. On the other hand, duration of pharmacoresistant epilepsy correlated positively (*i.e.* had a direct proportional association) with emotional well-being (*table 3*).

Clinical data and QoL in MTLE-HS. The correlation of medical history based on QOLIE-31 scores was the following: (1) patient age correlated negatively with cognitive functioning and medication effects; (2) age at epilepsy onset correlated negatively with seizure worry, overall QoL, emotional well-being, energy-fatigue, medication effects, and overall score; (3) duration of epilepsy correlated positively with seizure worry, overall QoL, emotional well-being, and energy-fatigue; (4) duration of pharmacoresistance correlated positively with emotional well-being; (5) number of AEDs correlated negatively with emotional well-being; and (6) number of previous therapeutic trials correlated positively with response to question 31, seizure worry, energy-fatigue, and overall score (*table 3*).

Neuropsychological findings and QoL in TLE. Significant positive correlations were identified between 6 of

Table 3. Correlation between clinical data and QOLIE-31 scores.

QOLIE-31	Age	Age at epilepsy onset	Duration of epilepsy (years)	Duration of PR epilepsy (years)	Seizure frequency (month)	Days with seizures (month)	No. AEDs	Therapeutic trials
Question 31	**0.190**	**-0.003**	**0.169**	**0.264**	**-0.016**	**0.052**	**-0.071**	**0.362***
SW	-0.123	-0.563**@	0.419**	0.454	0.255	0.252	0.210	0.336*
OQ	0.126	-0.358*	0.459**	0.173	-0.004	-0.008	-0.086	0.256
EW	0.123	-0.501**@	0.592**	0.658**@	0.242	0.125	-0.315*@	0.268
EF	-0.044	-0.483**@	0.417**	0.424	-0.210	-0.173	0.062	0.443**
CF	-0.315*@	-0.272	-0.039	-0.162	-0.249@	-0.257@	-0.172	0.174
ME	-0.388*	-0.646**@	0.246	0.302	0.134	0.128	0.087	0.119
SF	-0.054	-0.281	0.215	0.140	0.306	0.304	0.255	0.244
OS	-0.117	-0.535**	0.398*	0.276	0.085	0.063	0.000	0.360*

SW: seizure worry; OQ: overall quality of life; EW: emotional well-being; EF: energy/fatigue; CF: cognitive functioning; ME: medication effects; SF: social functioning; OS: overall score; AED: antiepileptic drug; PR: pharmacoresistance.
Values represent the Pearson correlation coefficients. *$p<0.05$; **$p<0.01$ for MTLE-HS patients ($n=40$). @ denotes $p<0.05$ when all TLE patients were considered ($n=60$).

Table 4. Correlation between neuropsychological memory evaluation and QOLIE-31 scores.

QOLIE -31	Barcelona Test								Rey-Osterrieth figure	
	Direct digits	Reverse digits	Semantic fluency	Logical M immediate free recall	Logical M immediate cue recall	Logical M delayed recall	Logical M delayed cue recall	Visual -spatial M	Copy	Memory
Question 31	0.411	-0.007	0.195	0.175	0.025	0.306$^{@}$	0.254$^{@}$	0.158	0.512*	0.333
SW	0.114	0.141	0.049	0.166	0.137	0.147	0.243	0.228	0.059	0.249
OQ	0.160	-0.107	0.333$^{*@}$	0.120	0.064	0.322$^{*@}$	0.238$^{@}$	0.628$^{**@}$	0.702**	0.580**
EW	-0.064	-0.009	0.131	-0.022	0.012	0.080	0.072	0.412$^{**@}$	0.318$^{@}$	0.476$^{*@}$
EF	0.084	0.034	0.125	-0.069	-0.049	0.118	0.013	0.249	0.166	0.153
CF	0.247	0.128	0.150	0.067	-0.055	0.203	0.044	0.437$^{**@}$	0.106	0.425*
ME	0.245	0.462$^{**@}$	-0.153	-0.152	-0.255	-0.194	-0.097	0.130	-0.132$^{@}$	0.472*
SF	-0.183	-0.193	0.071	0.098	0.116	0.079	0.094	0.055	-0.254$^{@}$	-0.351$^{@}$
OS	0.025	0.002	0.223	0.083	0.056	0.185	0.118	0.349*	0.094	0.200

M: memory; SW: seizure worry; OQ: overall quality of life; EW: emotional well-being; EF: energy/fatigue; CF: cognitive functioning; ME: medication effects; SF: social functioning; OS: overall score.
Values represent the Spearman correlation coefficients. *$p<0.05$; **$p<0.01$ for MTLE-HS patients (n=40). @ denotes $p<0.05$ when all TLE patients were considered (n=60).

8 memory-related items, based on the Barcelona Test, and 4 QOLIE-31 subscores, notably overall QoL. The Rey-Osterrieth figure scores correlated positively with emotional well-being, but negatively with medication effects and SF (*table 4*).

Neuropsychological findings and QoL in MTLE. The observations described for the entire TLE group regarding Barcelona Test scores remained valid when only the MTLE-HS group was considered. However, the Rey-Osterrieth figure scores showed positive correlations with overall QoL, emotional well-being, cognitive functioning, and medication effects in this group (*table 4*).

Discussion

The main objectives of this study were to examine the effects of different clinical and demographic factors on the quality of life in patients with pharmacoresistant TLE undergoing an integral evaluation prior to epilepsy surgery, and correlate their self-reported quality of life with objective findings based on neuropsychological evaluation.

Our institution is a tertiary centre that provides medical assistance to patients aged 15 and older who are referred from different levels of the National Health System from all over the country, where patients are not routinely considered for epilepsy surgery. Furthermore, the time and cost required to attend consultations and investigations restrict the number of patients who actually undergo full evaluation. Therefore, we recognise that this study is limited by the biased sample of non-randomised patients from a single surgical epilepsy centre. Nevertheless, the homogeneity of the sample and similarity to previously studied populations (Leidy *et al*., 1999; Suurmeijer *et al*., 2001; Djibuti and Shakarishvili, 2003; Rivera *et al*., 2005), allow us to consider the present data as a fair representation of our TLE patients, keeping in mind that any generalisations should be made with caution. We considered the evaluation of QoL at the time of surgical referral to be an objective baseline in this selected homogenous group of patients, which may be particularly valuable in the assessment of implications of cognitive function and/or seizure outcome on QoL during postsurgical follow-up in the future (Langfitt *et al*., 2007).

Aetiology proved to be relevant for QoL; patients with MTLE-HS had lower QOLIE-31 scores than patients with lesional TLE, as previously reported in the literature (Elsharkawy *et al*., 2009). Clinical and neuropsychological associations were generally similar between the entire group and the MTLW-HS subset of patients, but the latter showed stronger correlations. Note that although both groups presented similar seizure frequency, MTLE-HS patients had a longer duration of epilepsy and a higher number of AEDs,

factors that may account for these marked disparities (Djibuti and Shakarishvili, 2003; Rivera *et al*., 2005; Edefonti *et al*., 2011; Gordon-Perue *et al*., 2011) (*see table 1*). Despite the increasing evidence in favour of early surgery (Wiebe *et al*., 2001), TLE patients (notably MTLE-HS patients) still experience an unacceptable delay in referral for surgical treatment (Haneef *et al*., 2010). For this reason, medical education should stress the fact that patients with non-lesional TLE should be evaluated as promptly as those with evident structural lesions.

Patients with epilepsy differ in their cognitive abilities with respect to the side of ictal onset (Meletti *et al*., 2003), however, the implications of this on QoL are not usually explored. Right ictal onset was associated with worse QoL, notably for emotional well-being; a finding that is concordant with previous observations in children (Mathiak *et al*., 2010), but contrary to prior findings in an adult population (Andelman *et al*., 2001). The Health-Related Quality of Life in Childhood Epilepsy Questionnaire was used in the former study, which is completed by parents, while the QOLIE-31 for self-reported QoL was used in the latter.

It would appear that there is an over-representation of left-sided TLE patients, which was a constant finding since the beginning of our epilepsy surgery program (Castillo *et al*., 2004). Whether this constitutes a fair representation of our population or a referral bias is unclear. Scores were similar irrespective of gender, although some disparities regarding seizure worry and physical status are known to exist (Leidy *et al*., 1999; Djibuti and Shakarishvili, 2003; Rivera *et al*., 2005). The presence of generalised seizures had a considerable negative impact for 4 of the 7 subscores, supporting the observations made by Baker *et al*. (1998) even though they used a different instrument to assess QoL.

Considering all TLE patients, the subscore for cognitive function (despite medication effects in the MTLE-HS) group was significantly affected by older age and higher seizure frequency, a factor largely recognised as a predictor of poor outcome (Baker *et al*., 1998; Leidy *et al*., 1999; Djibuti and Shakarishvili, 2003; Rivera *et al*., 2005; Guekht *et al*., 2007; Phabphal *et al*., 2009). Given the fact that not all patients have seizures regularly over the course of a month (*i.e*. they may present with seizures in clusters), we considered it important to also include the number of days per month in which the patient had seizures, a parameter not commonly investigated or reported. This measure also had a negative impact on the self assessment of cognitive function.

Previous studies have investigated the impact of age at epilepsy onset on QoL in patients with pharmacoresistant epilepsy (but not specifically in TLE patients) with different results. In contrast to previous studies of heterogeneous populations which reported no correlation (Boylan *et al*., 2004; Rivera *et al*., 2005), based on our study of a more homogeneous population, seizure onset at an older age was shown to be associated with higher scores for seizure worry, emotional well-being, and energy/fatigue, and medication influenced scores for all TLE patients, as well as the overall score for the MTLE-HS subgroup (Loring *et al*., 2004; Szaflarski *et al*., 2006). Duration of epilepsy in the MTLE-HS subgroup (and to a lesser extent, duration of pharmacoresistance) proved to be an important factor associated with better scores for seizure worry, overall QoL, emotional well-being, and energy/fatigue. This association might be due to a longer period of adaptation, which allows the patient to cope with the illness and its psychosocial consequences (Djibuti and Shakarishvili, 2003; Canuet *et al*., 2009; Westerhuis *et al*., 2011). A similar phenomenon occurred in patients who used a larger number of AEDs during their lifetime, showing better overall QoL, energy/fatigue, and overall scores. An elevated number of AEDs at the time of evaluation was associated with impaired emotional well-being for the entire TLE group, in accordance with previous studies (Rivera *et al*., 2005; Luoni *et al*., 2011).

QOLIE-31 offers a limited view of the patient's cognitive status, since the only aspect evaluated is memory. Regarding the Barcelona test results, only visuospatial memory was found to be correlated positively with self-reported cognitive function. In the MTLE-HS group, cognitive function correlated positively with the Rey-Osterrieth figure memory scores, a test that evaluates both incidental memory and visuospatial organisation. In particular, copying of the figure correlated with other QoL factors (*table 4*). Therefore, it is possible that the disorganised nature of the copy impaired the creation of a durable memory trace, affecting figure recall. Interestingly, memory deficits in domains other than visuospatial were not reflected in self-reported QoL scores. A possible explanation is that formal neuropsychological tests detect punctual memory impairments that patients with epilepsy may not be aware of. This reduced awareness, in turn, may be explained by the lower functional levels and employment status associated with pharmacoresistant epilepsy (Marinas *et al*., 2011), which we did not explore in the current paper.

At this time, as basic and clinical research is constantly contributing to our understanding of the pathophysiology, manifestations, and treatment of epilepsy, we should not forget the psycho-social aspect of medicine. The present study demonstrates the relevance of correlation between clinical aspects and self-reported quality of life in pharmacoresistant TLE patients. It is clear that the approach to manage

epilepsy patients should not be limited to rationale based on seizure history alone, since this is only a single piece of a dynamic puzzle in which the patient and family are engaged in. □

Acknowledgements and disclosures.
We thank the staff members of the outpatient Epilepsy Surgery Clinic for their support, as well as Dr Erika Brust-Mascher for reviewing the manuscript. This work was self-funded (no specific granting agency involved) and presented in abstract-form at the 29th International Epilepsy Congress, Rome 2011.
None of the authors have any conflict of interest to disclose.

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