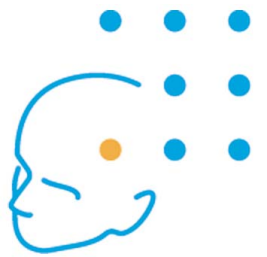


LONGITUDINAL COGNITIVE OUTCOME IN CONSERVATIVELY OR SURGICALLY TREATED CHILDREN AND ADOLESCENTS WITH FOCAL EPILEPSIES



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RATIONALE

To evaluate the longer-term impact of treatment (medical vs. surgical) and seizures on cognition in children and adolescents with pharmacoresistant focal epilepsies.

METHODS:

17 medically and 54 operatively treated children/adolescents (mean age 12 ±3 yrs.) had follow-up evaluations between 2 and 12 yrs. (mean 5 yrs.) (table 1, figure 1). Groups were not randomized to treatment and differed at baseline with respect to seizure severity, age at onset and duration of epilepsy, pathology, and lateralization of epilepsy. 63% of the operated children had temporal lobe epilepsy (conservative 59%). The medical group had 2 (T1 baseline/ T3 long-term), the operated group 3 evaluations (T1 baseline/ T2 one year postoperatively/T3 long-term).

Table 1 Bonn Longitudinal Study

groups n=		medical 17	surgical 54
sex	(m/f)	8/9	26/28
age	m/sd	12.7/2.8	12.7/2.9
Onset of E.	m/sd	8/5	6/4
Duration of E.	m/sd	4/4	6/4*
Pathol: nI/AHS/TU/oth.	[%]	35/18/18/29	6/20/32/42*
Lateralization: r / l / bi	[%]	29/47/24	52/48/ -*
Localization: TLE E-TLE	[%]	59/41	63/37
Follow-Up interval [months]	T1-T2 T1-T3	- 56 (22-142)	12 62 (22-140)

* significant differences

Patients were evaluated with respect to seizures, drug therapy, cognition (FS IQ, attention, verbal/figural memory, language, visuo-construction), and quality of life.

CONCLUSIONS:

Epilepsy surgery is very successful in achieving sustained freedom from seizures and reduction or withdrawal of AED in children with chronic epilepsy. Cognition and behavior show significant improvement particularly after temporal lobe surgery and when seizures are successfully controlled. As in adults, memory is most vulnerable to epilepsy surgery. Although, in the long run, surgical defects can be largely compensated, it appears that even younger patients are often operated too late. Thus early and tailored surgery should be considered in order to prevent mental retardation due to uncontrolled chronic epilepsy on the one hand and loss of acquired functions due to late surgery on the other hand.

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RESULTS:

SEIZURES

At baseline, complex partial seizures with secondary generalization were the predominant seizure type in the surgical group (figure 1a).

At T3, 72% of the operated patients were completely seizure free and 22% had > 50% seizure reduction (medical: 12% seizure free, additionally 47% responders). (see also figure 1b)

Figure 1a Baseline: Seizures

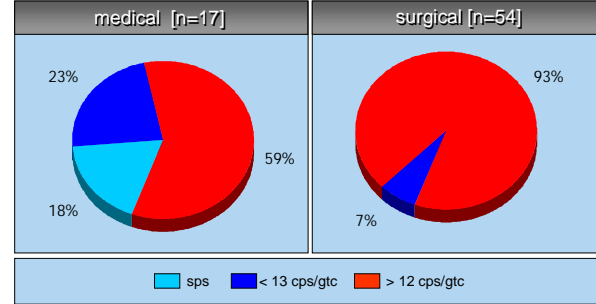
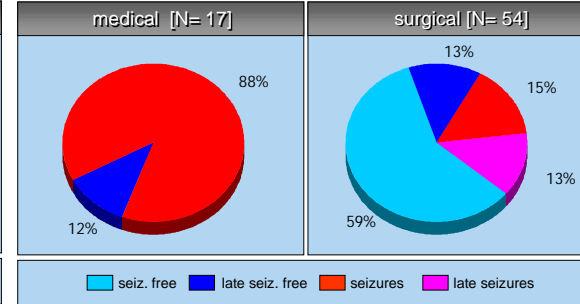


Figure 1b Outcome: Seizures



COGNITION

At baseline [T1] 30 to 50% of the patients showed impairment in one or more cognitive domains (figure 3a). An earlier onset of epilepsy, generalized tonic-clonic seizures, polytherapy, and greater seizure frequency was associated with poorer performance levels.

At the long-term follow-up [T3] attention and higher cognitive functions improved in the medical group (20-36%) and even more in operated patients (62-65%). Losses in these functions were rare (2-14%). As for memory, a comparable number of patients in both groups showed deteriorated (35% medical, 39% operated) or improved (both groups 41%) performance at the long term follow-up [T3] (figure 3b).

In the operated group, memory losses were more frequent (55% vs. 25% gains) immediately after surgery [T2]. However, there was a considerable number of children who showed improved memory later on in the time between T2 and T3 (52% improved vs. 27% losses) (figure 3c).

Figure 3a Baseline: Cognitive Performance

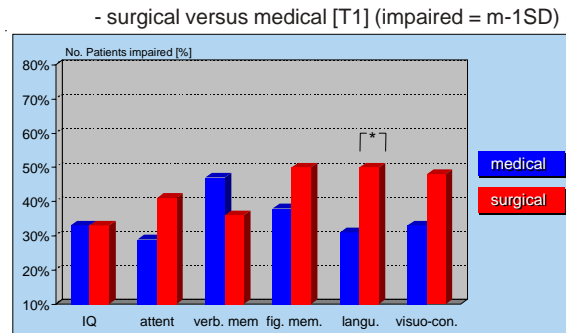


Figure 3b Outcome: Cognitive Performance

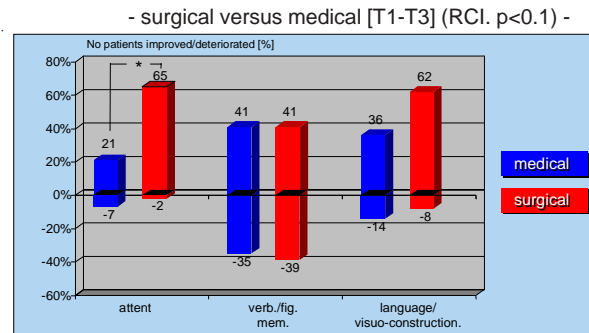
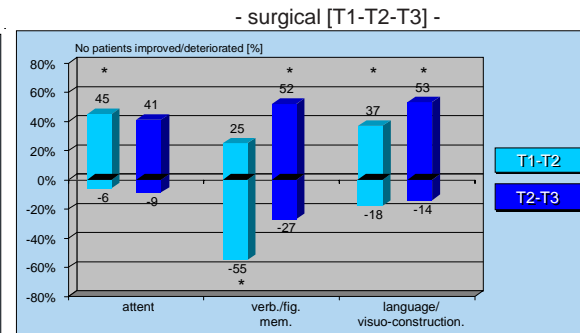


Figure 3c Outcome: Cognitive Performance



Predictors of a better cognitive long-term outcome were better baseline performance, better seizure control (figure 4a), temporal lobe surgery (figure 4b), and surgery at younger age. Within the temporal resection group, 2/3 resections and selective surgery caused more memory impairment than lesionectomies (figure 4c).

Figure 4a Cognitive Change and Seizure Control

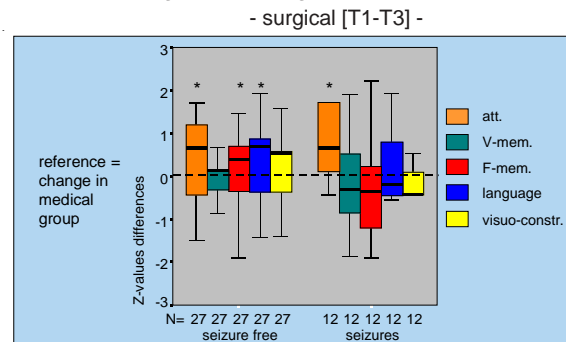


Figure 4b Cognitive Change and Site of Surgery

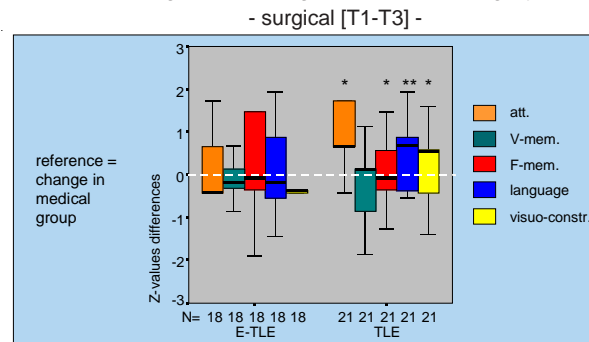
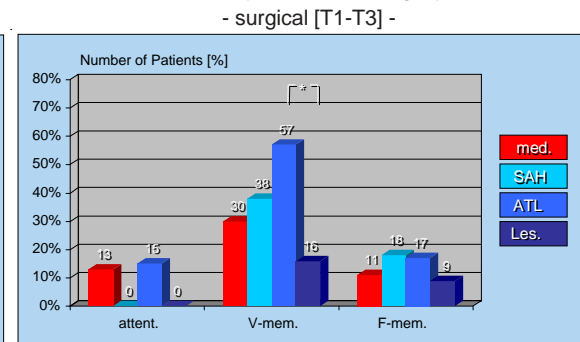
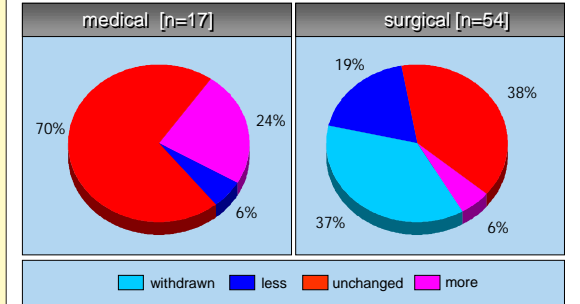


Figure 4c Memory and TLE-Surgery



AED

Figure 2 Outcome: AED



65% versus 69% of the medically and surgical group had AED polytherapy at baseline (T1). At T3, AED had been withdrawn in 37% of the operated patients and 18% changed from polytherapy to monotherapy (medical group 6%) (figure 2).

QUALITY OF LIFE IN EPILEPSY

After surgery, and particularly when patients became seizure free, superior outcome was also observed with respect to career, behavior, self reported mood, and QOL (figure 5).

Figure 5 Quality of Life - Treatment and modified QOLIE (12) [T3] -

