

VERBAL MEMORY DECLINES ARE LARGEST FOR PATIENTS WITH DEPRESSION AND ANXIETY AFTER ANTERIOR TEMPORAL LOBECTOMY

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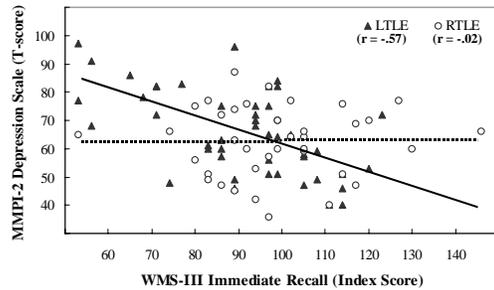
OBJECTIVE

To characterize the relationship between the presence of depression and/or anxiety and changes in memory function after anterior temporal lobectomy (ATL).

BACKGROUND

Depression and anxiety are the most common psychiatric disorders found in patients with temporal lobe epilepsy (TLE) before and after anterior temporal lobectomy (ATL) (Glosser et al., 2000; Jones et al., 2005). As Figure 1 demonstrates, severity of depressive symptoms is associated with level of memory impairment in TLE patients, especially for patients with a left-sided seizure focus (from Dulay et al., 2004).

Figure 1: Association between depression and memory in chronic epilepsy



PARTICIPANTS

- ✓ We studied 56 patients (ages 17–56 years) who underwent ATL for refractory epilepsy.
- ✓ Patient data were divided into four groups: left-ATL with (N=10) and without (N=13) emotional disturbance and right-ATL with (N=17) and without (N=16) emotional disturbance.
- ✓ Patients were included if they had an IQ score greater than 84 to ensure that memory deficits were not attributable to general cognitive impairment.

APPARATUS, PROCEDURES & ANALYSES

- ✓ Retrospective chart review was used to determine the presence of emotional disturbance (mood and anxiety disorders), which was based on recommendations for psychiatric referral after ATL made by the attending neuropsychologist.
- ✓ Memory abilities were assessed an average of 5 months before surgery and an average of 11 months after surgery using the Verbal and the Nonverbal Selective Reminding Tests (Buschke et al., 1974; Fletcher 1985).
- ✓ There were no significant differences between the 4 groups in age, education, age at seizure onset, duration of illness, pre-ATL seizure frequency and post-ATL seizure outcome.

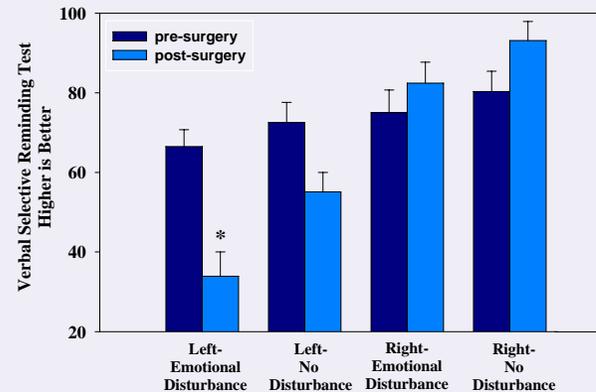
RESULTS: Rates of Depression and Anxiety

Twenty-seven patients (48% of the sample) received recommendations for psychiatric treatment after surgery: 13 for possible mood disorders, 2 for anxiety disorders, and 12 for comorbid mood and anxiety disorders.

RESULTS (Figure 2)

Repeated measures ANOVA indicated that left-ATL patients with emotional disturbance had the largest verbal memory reductions from before to after surgery compared to all other groups (Tukey post-hoc p values < 0.01). There was also a drop in the number of words recalled by left-ATL patients without emotional disturbance, but the reductions were significantly greater for left-ATL patients with emotional disturbance.

Figure 2: Association between depression and memory before and after ATL



RESULTS: Right-ATL

There was slight improvement in verbal recall ability for right-ATL patients after surgery regardless of psychiatric status (see Figure 2). There were no significant interactions or main effects for the nonverbal memory tasks.

References

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 Fletcher JM. Memory for verbal and nonverbal stimuli in learning disability subgroups: analysis by selective reminding. *J Exp Child Psychol* 1985;40:244–59.
 Jones, JE, Hermann BP, Barry JJ, Gilliam FG, Kanner AM, Meador KJ. Clinical Assessment of Axis I Psychiatric Morbidity in Chronic Epilepsy: A Multicenter Investigation. *J Neuropsychiatry Clin Neurosci* 2005;17:172–179.
 Glosser G, Zwill AS, Glosser DS, O'Connor MJ, Sperling MR. Psychiatric aspects of temporal lobe epilepsy before and after anterior temporal lobectomy. *J Neurol Neurosurg Psychiatry* 2000;68:53–8.

RESULTS: Pathology

Table 1 below shows that patients with classic Ammon's Horn Sclerosis were more likely to have emotional disturbance compared to patients with ganglioglioma both before and after surgery.

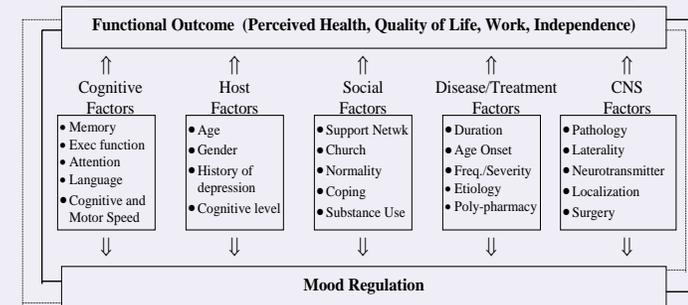
Table 1. Secondary conditions divided by pathology before and after surgery

	Neuropathology			
	AHS (n = 27) %	Atypical MTS (n = 10) %	GG (n = 12) %	Other (n = 8) %
Before Surgery				
Memory impairment	61.9%	36.4%	41.7%	73.0%
Emotional disturbance	61.8%	27.3%	16.7%**	75.0%
After Surgery				
Good seizure outcome	87.3%	9.1%***	75.0%	41.7%
Memory impairment	58.0%	81.8%	50.0%	75.0%
Emotional disturbance	51.2%	36.4%	16.7%*	58.3%

AHS = Ammon's horn sclerosis; MTS = Mesial temporal sclerosis; GG = Ganglioglioma; *p < 0.05 compared to AHS after surgery; **p < 0.01 compared to AHS before surgery; ***p < .001 compared to AHS and GG after surgery.

Context for Our Findings

Interactive Model Between Mood Regulation and Outcome



SUMMARY & CONCLUSIONS

- ✓ Our results suggest that besides side of excision, the presence of depression and anxiety should be taken into account when evaluating verbal memory deficits after ATL.
- ✓ There was no relationship between emotional disturbance and nonverbal memory.
- ✓ The relationship between emotional disturbance and cognition is complex and requires further exploration.
- ✓ Questions remain regarding whether or not verbal memory deficits will improve after ATL if psychiatric symptoms are remediated with psychotherapeutic or psychopharmaceutical interventions.