

Investigating the prognosis of Transient Epileptic Amnesia: Does it lead to Alzheimer's Disease?

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Introduction & Aims

- Transient Epileptic Amnesia (TEA) is a form of adult onset temporal lobe epilepsy characterised by brief, recurring amnesic seizures¹.
- Between these episodes, other memory deficits also commonly occur, including autobiographical amnesia and accelerated long-term forgetting².
- Short-term follow-up after commencing anticonvulsant medication suggests good seizure control and stable cognition³⁻⁴.
- Recent case reports, however, have raised concerns that TEA may be a prodrome of Alzheimer's Disease (AD).⁵⁻⁶

Aims:

- Investigate clinical & cognitive outcome of patients with TEA over 10-20 years;
- Assess evidence of increased risk of AD.

Cognitive Measures

- General cognitive ability:** NART⁷ or WASI⁸
- Objective memory assessment:**
 - Logical Memory story 1 (LM 1&2)⁹
 - Rey Complex Figure (RCFT- 30' recall)¹⁰
 - Recognition Memory Test (RMT) – Words (W) & Faces (F)¹¹
- Additional tests (C2):** Naming (GNT)¹², verbal fluency (FAS, Animals)¹³, problem solving (WCST)¹⁴

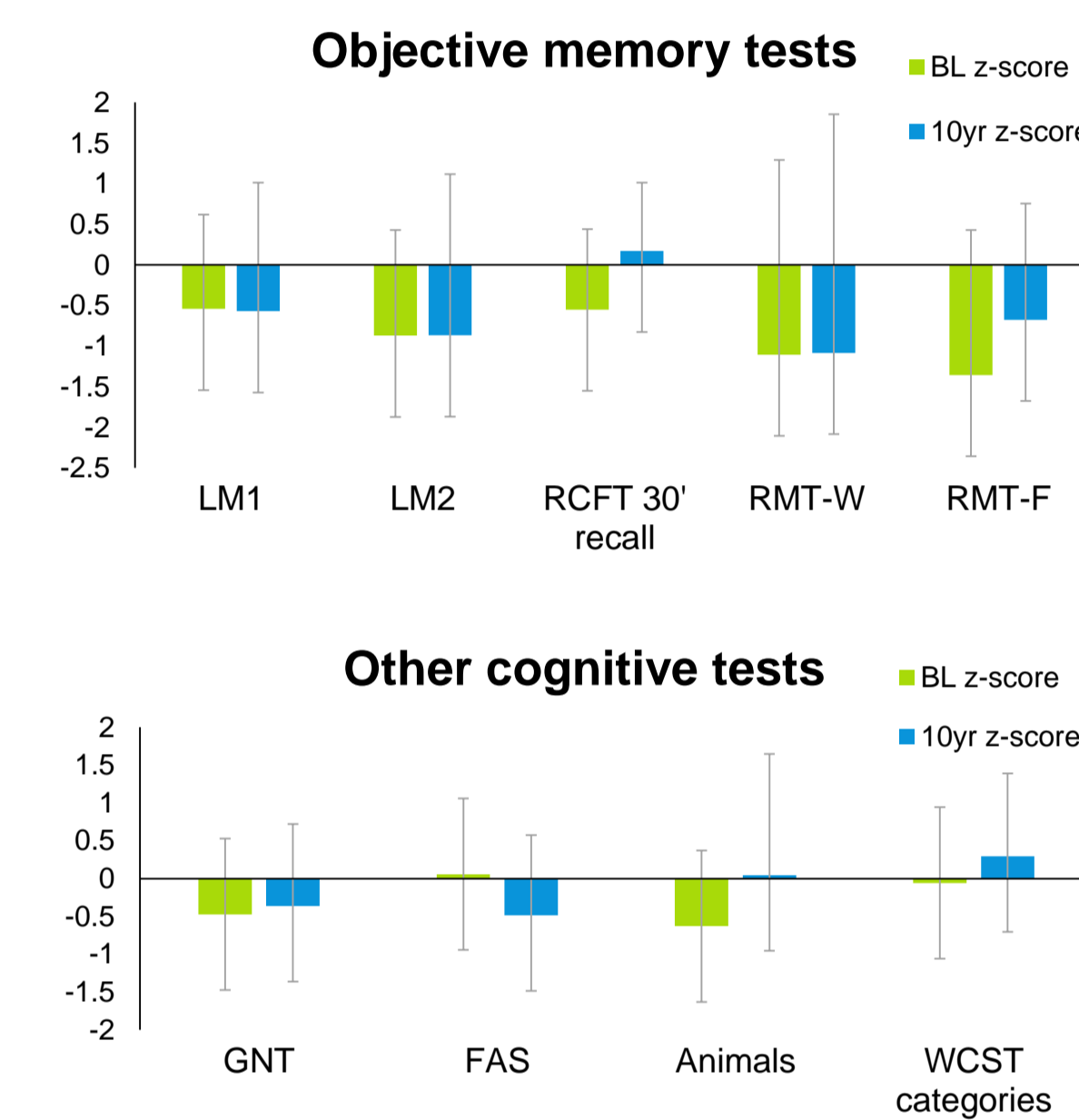


Table 1: Characteristics of participants who completed neuropsychological review

Demographics	TEA-BL (n=50)	TEA-10yr (n=19)	TEA-20yr (n=3)
Mean age (SD)	66yrs (9)	75yrs (8)	83yrs (5)
Sex (M : F)	34 : 16	15 : 4	2 : 1
TEA history			
Mean age at onset (SD)	62yrs (9)	62yrs (8)	55yrs (5)
Median amnesic attacks at BL (IQR)	10 (6 - 30)	15 (6 - 27)	50 (28 - 55)
Proportion of +ve EEG	36%	32%	33%

10-year Cognitive Results

- General cognitive ability:** above average with no decline (BL: \bar{x} = 117, SD = 12; 10yr: \bar{x} = 121, SD = 11), when TEA data were compared with HC using z-scores or modified t^{17} .
- Compared with matched peers, the TEA group was not significantly reduced on any measure at 10yrs.



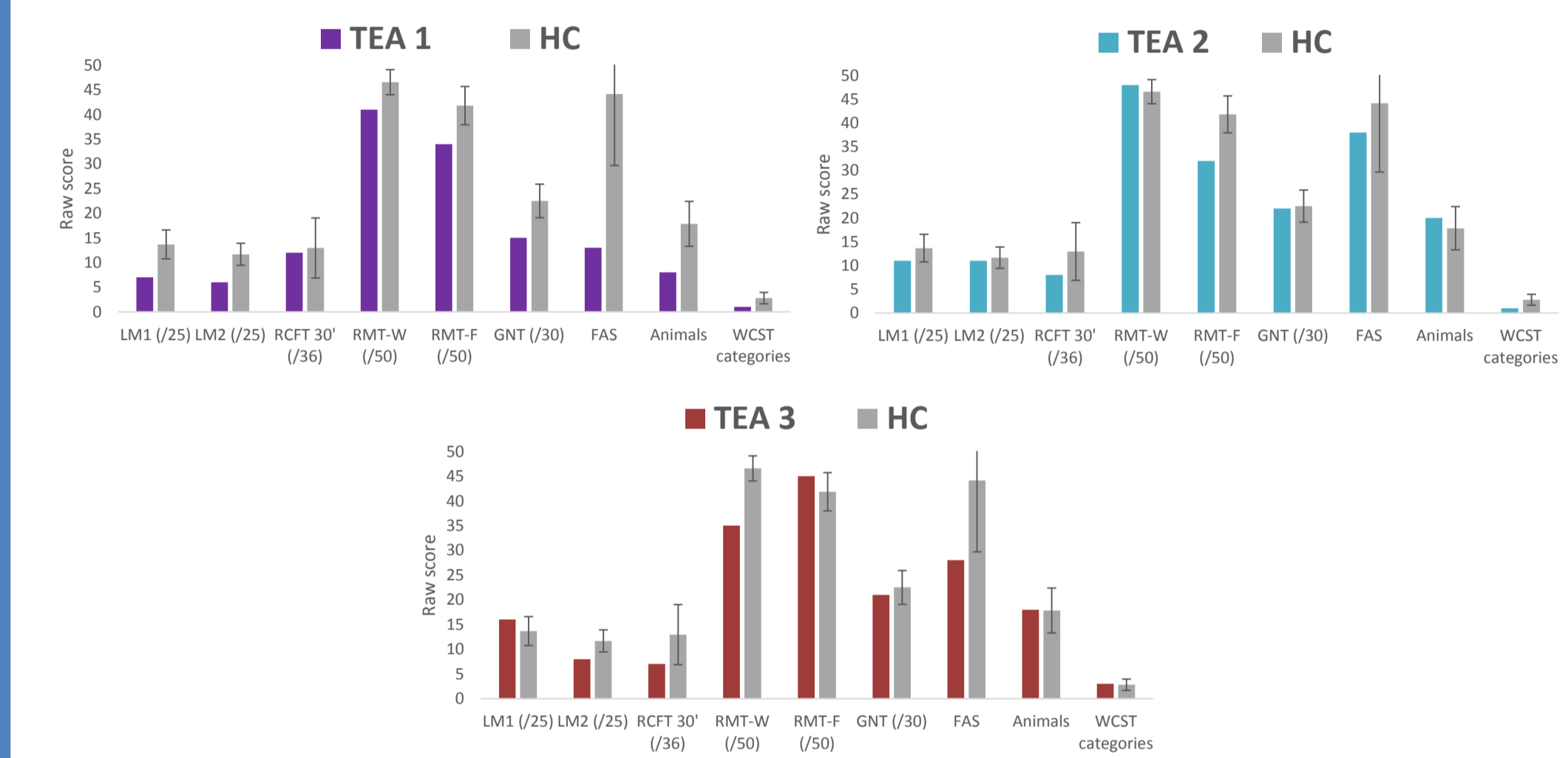
- At an individual level, impaired performances (i.e. 2 SDs < HC \bar{x}) were found in up to 26% of the TEA sample, for any one test.
- As a group, patients with TEA showed significant change from BL to 10yrs on measures of story recall, recognition memory, verbal fluency and problem-solving.
- Despite this, for each individual test, approximately a third of patients remained stable or improved on their scores.

Test	% cases impaired (>2 SDs below HC \bar{x})	Group level* decline (p)	% cases no decline (10yr > BL)
LM1	21	Y; p = .048	37
LM2	26	Y; p = .038	48
RCFT 30' recall	0	N; n.s	31
RMT-W	26	Y; p = .039	37
RMT-F	16	Y; p < .001	11
GNT	5	N; n.s	33
FAS	11	Y; p = .023	18
Animals	17	Y; p = .007	17
WCST categories	0	Y; p = .043	33

*paired t-test comparing scores at 10yrs vs BL for each patient; differences are in the direction of decline; n.s = non-significant

20-year Cognitive Results

- Cognitive change:** general cognitive ability remained above average (\bar{x} = 118, SD = 10), with no decline after 20 yrs.
- Compared with HCs (\bar{x} = 74yrs), performance was not significantly reduced, with the exception of one memory measure per participant (TEA1: LM; TEA2: RMT-F; TEA3: RMT-W).



- Significant declines over time (comparing 10 to 20yrs) were only observed for delayed story recall and letter fluency, but were not seen in all participants.

Discussion

- Memory difficulties persist in TEA, even with successful cessation of seizures.
- For some people, these difficulties remain stable over 10-20 years; in others, declines are observed.
- Over time, additional changes in executive function may arise in some.
- Compared with matched healthy controls, people with TEA performed within age-expectation on the majority of measures.
- Across the two cohorts, prevalence of AD (8.6%) was similar to population prevalence data (9.7%)¹⁶; with no evidence of reduced life expectancy (> 79 yrs).¹⁵
- The prognosis of TEA appears relatively benign.

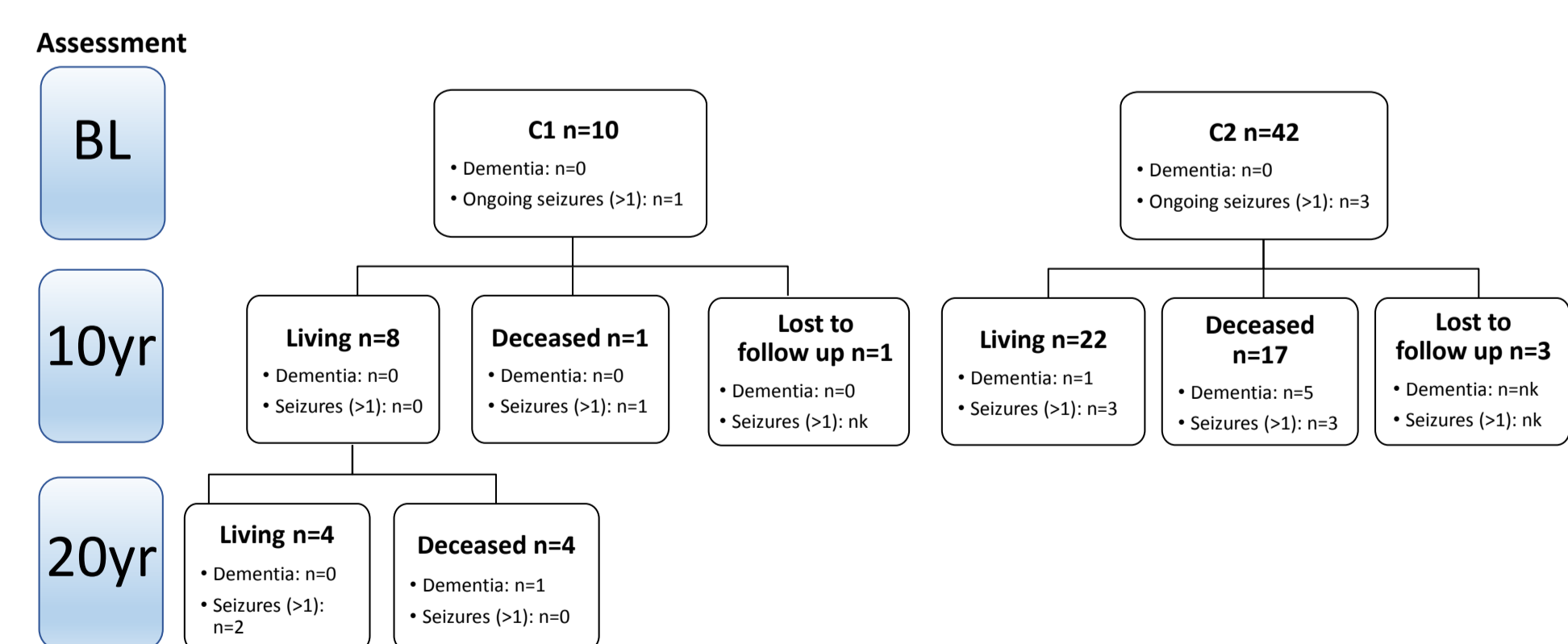
Participants

2 cohorts of patients with TEA were studied:
C1: 10 patients¹ - at baseline (BL), 10 yrs & 20 yrs;
C2: 42 patients² - at baseline (BL) and 10 yrs only.

- Clinical outcomes:** AD diagnosis and mortality were recorded and compared with published prevalence rates.¹⁵⁻¹⁶ Seizure history was gained via clinical interview and/or GP records.
- Cognitive outcomes:** comprehensive cognitive testing was completed in a subset (see Table 1).
- TEA-BL was compared with 24 healthy age- & IQ-matched controls (HCs); TEA-10yr & TEA-20yr were compared with 12 healthy IQ-matched controls (\bar{x} = 74yrs).

Clinical Results

- Dementia:** no cases of AD in C1 after 20 yrs (1 case of vascular dementia); 4 cases of AD in C2 after 10 yrs (+2 other cases of dementia).
- Life expectancy:** did not appear reduced.
- Seizures:** generally well controlled.



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