

Survival analysis in early-onset Alzheimer's disease

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The interval from symptom onset to diagnosis of early-onset AD exceeds that reported for late-onset AD. Patients with EOAD more frequently present with non-amnestic clinical phenotypes, accounting for nearly 30% of cases, which may contribute to delayed diagnosis. Patients in our EOAD cohort had an average survival of eight years from symptom onset. Advanced-stage diagnosis, reflected by lower MMSE scores; rapid functional decline; and coronary disease were identified as the main negative survival predictors.

INTRODUCTION

Early-onset Alzheimer's disease (EOAD) begins before the age of 65 and occurs in 5.5% of all patients with Alzheimer's disease (AD). Later diagnosis, atypical clinical presentation, a more aggressive course of the disease → classification as a separate entity within the AD spectrum, with a prognostic profile that has not yet been adequately investigated. Our research aimed to examine survival in patients with EOAD and to define the demographic and clinical parameters that influence the survival duration.

METHODS

A retrospective observational study:

- 135 patients (51 men and 84 women) with EOAD
- Cohort of the Center for Memory Disorders, Neurology Clinic (2012-2017)

The survival analysis was conducted as of December 31, 2024 with possible outcomes of survival/death. Demographic and clinical parameters, assessment of global cognitive abilities, comorbidity data → Statistical analysis, Kaplan-Meier analysis and log-rank test.

RESULTS

→ 73.3% of patients had a typical and 26.7% had an atypical clinical presentation.

→ 22 patients had no comorbidities, 56 had one comorbidity, and the remaining 57 had more than one comorbidity.

→ 106 patients died (78.5%), 9 patients survived (6.67%), and the outcome was unknown for 20 patients (14.8%).

Tables 2-3. Median survival times according to patient characteristics and comorbidities

Parameter	X±SE	p
MMSE		
<15	7.64±0.26	0.036
≥15	8.69±0.39	
Time from symptom onset to loss of functionality		<0.001
<5 years	6.87±0.26	
≥5 years	9.07±0.33	
Age at symptom onset		0.692
<57 years	8.38±0.35	
≥57 years	8.11±0.38	
Time from symptom onset to diagnosis		0.692
<2 years	8.31±0.59	
≥2 years	8.21±0.27	
Age at EOAD diagnosis		0.812
<59.5 years	8.30±0.36	
≥59.5 years	8.21±0.38	
Age at loss of functionality		0.238
<62 years	7.88±0.29	
≥62 years	8.45±0.40	
Institutionalization		0.227
no	9.36±0.55	
yes	8.55±0.49	

Legend: X – mean; SE – standard error; SD – standard deviation; N – number of patients for whom data were available; MMSE - Mini Mental State Examination * - asthma/COPD are not included in the table because only one patient had this comorbidity

Comorbidity*(frequency)	X±SE	p
Coronary artery disease (4.44%)		0.008
no	8.34±0.26	
yes	6.00±0.63	
Any cardiovascular disease (45.19%)		0.958
no	8.20±0.32	
yes	8.30±0.43	
Stroke (6.67%)		0.405
no	8.18±0.26	
yes	8.57±0.67	
Diabetes mellitus (9.00%)		0.898
no	8.25±0.27	
yes	8.00±0.58	
History of any fracture (8.15%)		0.518
no	8.18±0.26	
yes	9.00±1.11	
History of hip fracture (4.44%)		0.177
no	8.15±0.26	
yes	10.40±1.72	
Malignancy (after EOAD diagnosis) (5.19%)		0.907
no	8.25±0.27	
yes	8.14±0.80	
Depression (62.97%)		0.325
no	7.86±0.36	
yes	8.47±0.35	

Table 1. Demographic and clinical characteristics of patients

Variable	X±SD	Min	Max	N
Age at beginning of follow-up	60.17±5.27	38	69	135
Education years	11.66±2.83	4	18	134
Age at symptom onset	56.79±4.98	37	65	135
Time from symptom onset to diagnosis	2.36±1.18	0.5	5	135
Age at EOAD diagnosis	59.16±5.21	38	68	135
Duration of illness until follow-up	3.37±1.49	1	7	135
MMSE at first visit	15.04±6.63	0	28	135
Age at loss of functionality	61.56±5.53	38	71	130
Time from symptom onset to loss of functionality	4.87±1.65	1	11	130

Figures 1-4. Kaplan-Meier survival curves from symptom onset to outcome (death or December 31, 2024)

Survival curve

Mean survival 8.24±0.26 years

Survival curve

MMSE at first visit
0 - MMSE < 15
1 - MMSE ≥ 15

Survival curve

0 - time < 5 years
1 - time ≥ 5 years

Survival curve

0 - without coronary disease
1 - with coronary disease

CONCLUSIONS

→ Patients with EOAD survive an average of eight years from symptom onset.

→ The main negative predictors of survival are: diagnosis in a later stage of the disease, rapid loss of functionality and coronary disease.

REFERENCES

1. Koedam ELGE, Laufer V, Van Der Vlies AE, et al. Early-versus late-onset Alzheimer's disease: More than age alone. Journal of Alzheimer's Disease. 2010;19(4):1401–8. .
2. Rhodius-Meester HFM, Tijms BM, Lemstra AW, et al. Survival in memory clinic cohort is short, even in young-onset dementia. J Neurol Neurosurg Psychiatry. 2019;90(6):726–8.
3. Ueki A, Shinjo H, Shimode H, et al. Factors associated with mortality in patients with early-onset Alzheimer's disease: A five-year longitudinal study. Int J Geriatr Psychiatry. 2001;16(8):810–5.

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