

Blood Pressure Reactivity During Lecanemab Infusion Predicts Amyloid Clearance: A Real-World Study

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INTRODUCTION

Background

- Inter-individual variability in Lecanemab treatment response remains unexplained.
- Infusion-related reactions (IRRs), characterized by transient hemodynamic fluctuations, may reflect acute immune-mediated vascular reactivity, serving as an indirect marker of treatment engagement.

Objective

- To investigate how infusion-related vascular and immune response, especially blood pressure (BP) reactivity may indicate Lecanemab treatment efficacy, in terms of A β clearance.

RESULTS

Table1. Baseline Characteristics of Study Population (N = 30)

Variables	Total	Stable (N=9)	Reactive (N=21)	p
Age (years)	72.8 $\pm$ 8.6	66.9 $\pm$ 9.0	75.3 $\pm$ 7.3	0.028*
Sex (Female) (n%)	23 (76.7)	5 (55.6)	18 (85.7)	0.153
ApoE status (3/3, 3/4, 4/4)	7/18/5	2/4/3	5/14/2	0.263
Baseline A β (centiloid)	73.9 $\pm$ 35.8	53.9 $\pm$ 36.0	82.5 $\pm$ 32.9	0.060
Hypertension	13 (43.3)	3 (33.3)	10 (47.6)	0.691
Δ A β Burden (centiloid)	-28.9 $\pm$ 17.2	-18.9 $\pm$ 15.0	-33.2 $\pm$ 16.6	0.034*

Notes: Data are represented as mean $\pm$ SD or n(%), ApoE = apolipoprotein E.

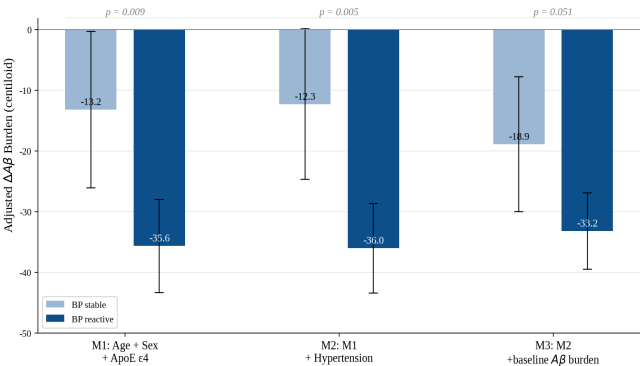


Figure1. Adjusted Δ A β Burden for BP reactive and stable groups in each models (N = 30)

METHODS

Subjects (Total N = 30)

- Selected eligible patients from a total of 64 individuals with early Alzheimer's disease, treated with Lecanemab at Boramae Medical Center
 - received biweekly infusions for 6 months (13 cycles)
 - completed both baseline & 6-month follow-up ¹⁸F Florbetaben PET
 - between January 2025 ~ April 2026

Measurement of Variables

- Amyloid-beta(A β) clearance: change in ¹⁸F Florbetaben PET (centiloid)
- BP reactivity: transient increase in systolic BP(SBP)
 - BP recorded at 15min before, immediately after, and 30 min after each infusion
 - if Δ SBP $\geq$ 20 mmHg, classified as BP reactive, else as BP stable

Table2. Multiple Linear Regression: BP-Reactive Phenotype and 6-Month A β clearance (N = 30)

	Model 1			Model 2			Model 3		
	β	95% CI	p	β	95% CI	p	β	95% CI	p
BP Reactivity	-22.4	[-38.9, -6.0]	0.009**	-23.8	[-39.6, -7.9]	0.005**	-14.3	[-28.7, 0.1]	0.051
Age	0.7	[-0.2, 1.5]	0.122	1.0	[0.1, 1.9]	0.037*	0.8	[0.1, 1.6]	0.029*
Sex	9.1	[-7.4, 25.5]	0.267	10.5	[-5.4, 26.4]	0.186	6.6	[-6.8, 20.1]	0.317
ApoE ε4	13.6	[-0.5, 27.6]	0.058	10.2	[-3.9, 24.3]	0.148	9.4	[-2.3, 21.1]	0.109
HTN				-11.1	[-24.1, 1.9]	0.089	-13.6	[-24.5, -2.7]	0.016*
Baseline A β							-0.2	[-0.4, -0.1]	0.002**

Abbreviations: CI: confidence interval; ApoE ε4 = ApoE ε4 status; HTN = hypertension diagnosis; Baseline A β = baseline A β burden
Model1: adjusted for age, sex, ApoE ε4 status, Model2: adjusted for age, sex, ApoE ε4 status, hypertension diagnosis
Model3: adjusted for age, sex, ApoE ε4 status, hypertension diagnosis, baseline A β burden

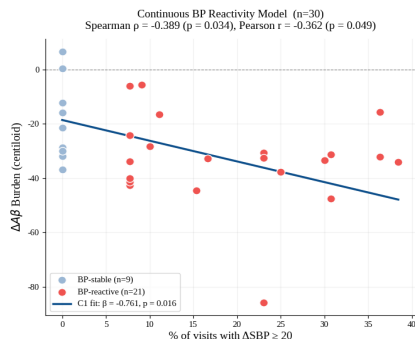


Figure2. Continuous BP reactivity model based on the proportion of reactive events across infusions (N = 30)

Statistical Analysis

- Multivariable Linear Regression
 - Association between A β clearance & BP reactivity
 - adjusted for age, sex, ApoE ε4 carrier status, baseline A β burden, and hypertension diagnosis
 - Continuous BP reactivity model
 - to capture variability beyond binary classification
 - based on the proportion of reactive events across infusions
 - Exploratory analysis on ApoE ε4 carriers
 - for patients with baseline PET & BP data (N = 45)
 - association between standard deviation(SD) /maximum Δ SBP & baseline A β burden

Table3. Multiple Linear Regression: Interaction between ApoE ε4 status & baseline A β (N = 45)

	SD of Δ SBP			Max of Δ SBP		
	β	95% CI	p	β	95% CI	p
ApoE ε4 X Baseline A β	0.05	[0.03, 0.14]	0.005**	0.25	[0.08, 0.41]	0.005**
ApoE ε4	-3.94	[-8.28, 0.41]	0.075	-17.82	[-30.92, -4.73]	0.009**
Baseline A β	-0.03	[-0.08, 0.02]	0.140	-0.13	[-0.27, 0.01]	0.062

- Among ApoE ε4 carriers, SD was positively correlated(Spearman r = 0.42, p = 0.018), while max Δ SBP was not correlated(Spearman r = -0.32, p = 0.271) with baseline A β burden(N = 31).

CONCLUSION

- Peri-infusion BP reactivity is independently associated with enhanced A β clearance during Lecanemab therapy.
- The observed hemodynamic response may reflect transient immune-mediated activation within the neurovascular unit.
- BP reactivity could act as an easily obtainable, real-time, and practical biomarker, with validation in larger cohorts.

References

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