

LRG1- Does It Have A Role In Dementia?

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Introduction

- Leucine-rich alpha-2 glycoprotein 1 (LRG1) is a signalling molecule implicated in multiple diseases, possibly via pathological angiogenesis
- Higher LRG1 levels has been linked to subsequent cognitive decline amongst diabetic patients, which may be mediated by increased arterial stiffness
- Relationship with neurodegeneration and cerebrovascular imaging markers remains unclear.

Methods

- Retrospective analysis of 146 memory-clinic patients
- Data collected included
 - Demographics
 - Function via Lawton and Barthel index
 - Time up and Go (TUG)
 - Cognitive scores via Mini-Mental State Examination (MMSE).
- Two radiologists independently reviewed baseline MRI brain imaging and rated
 - Medial Temporal lobe Atrophy (MTA) using Schelten's scale
 - Brain microbleeds using Microbleed Anatomical Rating Scale (MARS)
 - T2 white matter hyperintensities using Fazekas scale.
- Serum LRG1 levels measured via ELISA and analysed

Conclusion

- Plasma LRG1 appears to be associated with poorer baseline cognitive scores and with medial temporal lobe atrophy, suggesting that it may play a role in neurodegeneration.
- More research is needed to evaluate the relationship between LRG1 and neurodegeneration and whether it could be a potential biomarker for dementia.

Results

Table 1: Baseline Characteristics by LRG1 Tertiles

	All (n=145)	1 st Tertile	2 nd Tertile	3 rd Tertile 3	p-value
Plasma LRG1 (ug/mL)	46.2 ± 17.4	30.7 ± 4.7	42.6 ± 3.9	65.3 ± 15.4	<0.001
Age	76.4 ± 6.6	74.9 ± 7.4	74.7 ± 8.3	79.4 ± 6.4	0.002
Male n (%)	54 (37.2)	24 (49)	16 (34)	14 (28.6)	0.097
Hypertension n (%)	100 (69)	27 (55.1)	32 (68.1)	41 (83.7)	0.009
Diabetes Mellitus n (%)	51 (35.2)	15 (30.6)	16 (34.0)	20 (40.8)	0.561
Hyperlipidemia n (%)	105 (72.4)	37 (75.5)	32 (68.1)	36 (73.5)	0.704
Stroke n (%)	17 (11.7)	4 (8.2)	8 (17)	5 (10.2)	0.371
TBI* n (%)	2 (1.4)	2 (4.1)	0 (0)	0 (0)	0.137
Barthel Index	94.4 ± 12.8	96.0 ± 11.9	95.7 ± 11.2	91.9 ± 14.6	0.288
Lawton	9.4 ± 4	10.8 ± 3.4	9.7 ± 3.7	7.4 ± 4.2	<0.001
Time Up and Go	14.0 ± 5.5	13.1 ± 4.8	12.9 ± 4.6	16.1 ± 6.7	0.028
CDR-SB*	4.9 ± 3.2	4.5 ± 3.4	4.5 ± 3.1	5.6 ± 3.2	0.171
FAST*	3.8 ± 0.9	3.6 ± 1.0	3.8 ± 0.8	4.1 ± 0.9	0.059
CIR*	3.4 ± 2.7	2.7 ± 2.7	3.3 ± 2.7	4.2 ± 2.4	0.018
MMSE*	19.7 ± 5.6	21.2 ± 5.0	19.6 ± 5.4	18.2 ± 6.3	0.035
Right MTA*	1.8 ± 0.7	1.6 ± 0.6	1.8 ± 0.6	2.0 ± 0.7	0.014
Left MTA*	1.8 ± 0.7	1.8 ± 0.6	1.7 ± 0.61	2.0 ± 0.7	0.144
Total MTA*	3.6 ± 1.2	3.3 ± 1.1	3.5 ± 1.1	3.9 ± 1.4	0.042
Total DWM*	1.7 ± 0.7	1.6 ± 0.6	1.8 ± 0.7	1.7 ± 0.7	0.295
Total PVH*	1.9 ± 0.7	1.8 ± 0.6	2.0 (0.7)	2.0 (0.7)	0.200
Total WMH*	3.6 ± 1.2	3.3 ± 1.1	3.7 ± 1.3	3.7 ± 1.3	0.204
MARS* total	2.5 ± 15.0	1.1 ± 3.8	6.0 ± 25.8	0.4 ± 0.7	0.133
BMB* total	2.5 ± 15.0	1.1 ± 3.8	6.1 ± 25.8	0.4 ± 0.7	0.128

*Traumatic Brain Injury, Clinical Dementia Rating scale – Sum of Boxes, Functional Assessment Staging Tool, Clinical Insight Rating scale, Mini Mental State Examination, Medial Temporal Lobe Atrophy, Deep white matter hyperintensities, Periventricular white matter hyperintensities, White matter hyperintensities, Microbleed Anatomical Rating Scale, Brain Microbleeds

Table 2: Association between LRG1 and Total MTA

	Unadjusted			Adjusted * (Age, Gender, HTN, HLD, DM)		
	B	CI	P	B	CI	P
LnLRG1	0.572	0.009, 1.135	0.046	0.183	0.004, 0.363	0.045
1st Tertile	Reference			Reference		
2nd Tertile	0.173	-0.316, 0.661	0.485	0.272	-0.203, 0.746	0.746
3rd Tertile	0.602	0.121, 1.083	0.014	0.587	0.088, 1.087	0.022