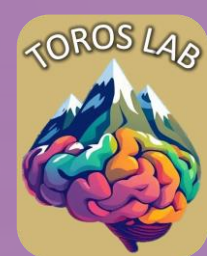


Sex-specific reproductive and environmental risk factors for Lewy body dementia



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Background

- Lewy body dementia (LBD), including Parkinson’s disease dementia and dementia with Lewy bodies, affects females and males differently.
- Although environmental and reproductive factors have been associated with Alzheimer’s and Parkinson’s diseases, LBD remains understudied.

Methods & Results

- LBD-Toros funded by LBD Association, a pilot remote survey, including 130 people with LBD (51 females, 79 males) and 124 age-matched cognitively normal controls (64 females, 60 males).
- Analyses were done in sex-stratified cohorts with false-discovery rate correction.
- Groups were compared for reproductive health and environmental health history (residence, beverage, chemical, alcohol, smoking)
 - No significant group differences after false discovery rate correction for multiple comparisons (Tables 1 and 2)
- Pairwise correlations between reproductive and environmental factors were assessed with tetrachoric, polychoric, polyserial correlations.
 - For females soldering had a moderate correlation with lower likelihood of pregnancy (r=−0.61); metal dust/fumes had moderate correlations with lower number of vaginal deliveries and live births (r=−0.52, r=−0.59).**
 - For males metal dust/fumes had a weak correlation with difficulty conceiving (r=0.47)**
- Factors associated with LBD were identified with elastic net regression models controlling for age.
 - For females not living in suburb, decaffeinated soda, pesticide, glue/adhesive, soldering, metal dust/fumes, giving birth to more babies weighing ≥9 lbs were associated with LBD risk**
 - For males not living in suburb/large city/large town, well water as drinking water, smoking, decaffeinated soda, metal dust/fumes, reproductive health problems, and not having vasectomy were associated with LBD risk**



Table 1. Lewy body dementia (LBD) and control group comparisons for environmental factors

		Females (n=115)		Males (n=139)	
		LBD (n=51)	Control (n=64)	LBD (n=79)	Control (n=60)
Age		62.78 (10.94)	64.55 (10.17)	66.09 (9.84)	63.83 (8.24)
Residence for ≥6 months	Large city (>250,000 people)	33 (64.7%)	36 (56.2%)	44 (55.7%)	43 (71.7%)
	Suburb of a large city	30 (58.8%)	49 (76.6%)	43 (54.4%)	40 (66.7%)
	Large town (25,000-99,999 people)	27 (52.9%)	26 (40.6%)	32 (40.5%)	32 (53.3%)
	Private well as main source of drinking water	13 (25.5%)	14 (21.9%)	26 (32.9%)*	10 (16.7%)*
	Near farm fields (within ¼ mile)	18 (35.3%)	21 (32.8%)	26 (32.9%)	13 (21.7%)
Beverage ≥1/week for ≥6 months	Caffeinated coffee	40 (78.4%)	48 (75.0%)	71 (89.9%)	52 (86.7%)
	Decaffeinated coffee	28 (54.9%)	26 (40.6%)	26 (32.9%)	25 (41.7%)
	Caffeinated soda	30 (58.8%)	41 (64.1%)	55 (69.6%)	43 (71.7%)
	Decaffeinated soda	25 (49.0%)	19 (29.7%)	32 (40.5%)	24 (40.0%)
Chemical for ≥100 days	Pesticide at work	11 (21.6%)	5 (7.8%)	18 (22.8%)	12 (20.0%)
	Pesticide at home	35 (68.6%)	42 (65.6%)	59 (74.7%)	41 (68.3%)
	Glues/adhesives	17 (33.3%)*	10 (15.6%)*	25 (31.6%)	14 (23.3%)
	Solvent/degreasers	12 (23.5%)	11 (17.2%)	28 (35.4%)	18 (30.0%)
	Welding/brazing/flame cutting metal	4 (7.8%)	1 (1.6%)	16 (20.3%)*	2 (3.3%)*
	Soldering	8 (15.7%)*	2 (3.1%)*	20 (25.3%)*	3 (5.0%)*
	Metal dust/metal fumes	9 (17.6%)	4 (6.2%)	20 (25.3%)*	6 (10.0%)*
Alcohol/ Smoking	Regular drinking	24 (47.1%)	37 (57.8%)	46 (58.2%)	37 (61.7%)
	≥100 cigarettes	16 (32.0%)	19 (30.2%)	46 (59.0%)*	22 (36.7%)*
	Regular cigarette smoking	15 (29.4%)	17 (26.6%)	40 (50.6%)	21 (35.0%)

Statistical significance for group differences is marked with * for unadjusted p<.05.

Table 2. Lewy body dementia (LBD) and control group comparisons for reproductive health factors

		Females (n=115)	LBD (n=51)	Control (n=64)
	Age at first period		13.12 (2.13)	12.72 (1.78)
	Pregnancy		41 (80.4%)	52 (82.5%)
	Number of pregnancy		2.57 (1.81)	2.27 (1.44)
	Gestational diabetes		4 (8.0%)	4 (6.3%)
	Number of vaginal deliveries		1.80 (1.55)	1.78 (1.28)
	Number of C-sections		0.29 (0.58)	0.17 (0.49)
	Number of deliveries with baby ≥9lbs		0.64 (1.22)	0.15 (0.40)
	Number of deliveries with live birth		2.06 (1.55)	1.89 (1.17)
	Age at first live birth		24.85 (4.72)*	27.37 (5.18)*
	Age at last live birth		31.74 (5.87)	31.84 (4.71)
	Breastfeeding ≥1 month		31 (63.3%)	42 (67.7%)
	Hysterectomy		15 (29.4%)	18 (28.1%)
	Oophorectomy		11 (22.0%)	11 (17.2%)
	Vaginal prolapse		8 (15.7%)	4 (6.3%)
	Birth control pills		39 (78.0%)	52 (82.5%)
	Years using birth control pills		6.38 (8.24)	8.77 (9.76)
	Depo-provera/injectables to prevent pregnancy		5 (10.0%)	4 (6.2%)
	Number of children alive at birth	Males (n=139)	LBD (n=79)	Control (n=60)
	Number of pregnancies that did not result in live birth		2.21 (1.31)	2.30 (1.25)
	Erectile dysfunction		0.43 (0.86)	0.44 (0.97)
	Tried to conceive ≥1 year		39 (49.4%)*	13 (21.7%)*
	Sexually transmitted infection		23 (29.5%)*	8 (13.3%)*
	Infection/ injury/ structural problem with testicle/ seminal vesicle/ epididymis		10 (13.0%)	4 (6.8%)
	Vasectomy		22 (28.6%)*	7 (11.9%)*

Statistical significance for group differences is marked with * for unadjusted p<.05.

Conclusions

- Environmental and reproductive factors are associated with LBD risk with overlapping environmental factors for females and males (not living in suburb, decaffeinated soda, metal dust/fumes).
- As environmental factors can impact reproductive health, supported by correlations we noted, how these different factors interact for LBD risk needs to be better understood.

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