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## OBJECTIVE

A study to investigate the predictive value of handedness with respect to motor symptoms in Veterans with Parkinson's disease (PD).

## BACKGROUND

Handedness is associated with structural and functional asymmetries in the brain, the significance of which is largely unexplored in PD. The predictive value of handedness with respect to asymmetry of motor disease in PD also remains controversial.

## METHODS

Using a standardized chart review approach, medical records of 403 consecutively evaluated PD patients, followed at the Parkinson's Disease Center at the Michael E. DeBakey VA Medical Center, were reviewed. The selected patient records contained information about pre-morbid handedness, description of the initial symptoms (type and distribution), and a detailed clinical assessment, including standardized evaluation of parkinsonism using the Unified Parkinson's Disease Rating Scale (UPDRS). The frequency and distribution of handedness were determined. The relationship of handedness to the side of onset of motor disease was analyzed using Chi-Square analysis. The type and distribution of the initial symptom/s were studied in relation to handedness.

## RESULTS

Table 1: Demographic distribution of PD patients by handedness

Demographics	N (%)	R-Handed	L-Handed	Ambi
<b>Gender</b>				
Men	308 (97.8%)	282 (97.6%)	24 (100%)	2 (100%)
Women	7 (2.2%)	7 (2.4%)	0 (0%)	0 (0%)
<b>Total</b>	<b>315 (100 %)</b>	<b>289 (91.7 %)</b>	<b>24 (7.6 %)</b>	<b>2 (0.7 %)</b>
<b>Ethnicity</b>				
White	252 (80.0%)	234 (81.0%)	17 (70.8%)	1 (50.0%)
Black	39 (12.4%)	34 (11.8%)	4 (16.7%)	1 (50.0%)
Hispanic	21 (6.7%)	18 (6.2%)	3 (12.5%)	0 (0.0%)
Other	3 (1.0%)	3 (1.0%)	0 (0.0%)	0 (0.0%)
<b>Onset</b>				
Unilateral	247 (78.4%)	223 (77.2%)	22 (91.7%)	2 (100%)
Right	164 (66.4%)	154 (69.1%)	8 (33.6%)	2 (100%)
Left	83 (33.6%)	69 (30.9%)	14 (66.4%)	0 (0%)
<b>Total</b>	<b>247 (100.0%)</b>	<b>223 (100.0%)</b>	<b>22 (100.0%)</b>	<b>2 (100%)</b>
Axial	45 (14.3%)	43 (14.9%)	0 (0%)	0 (0%)
Bilateral	23 (7.3%)	23 (7.9%)	2 (8.3%)	0 (0%)
<b>Total</b>	<b>315 (100%)</b>	<b>289 (100%)</b>	<b>22 (100%)</b>	<b>2 (100%)</b>

Figure 1: Emergence of motor symptoms on the dominant side

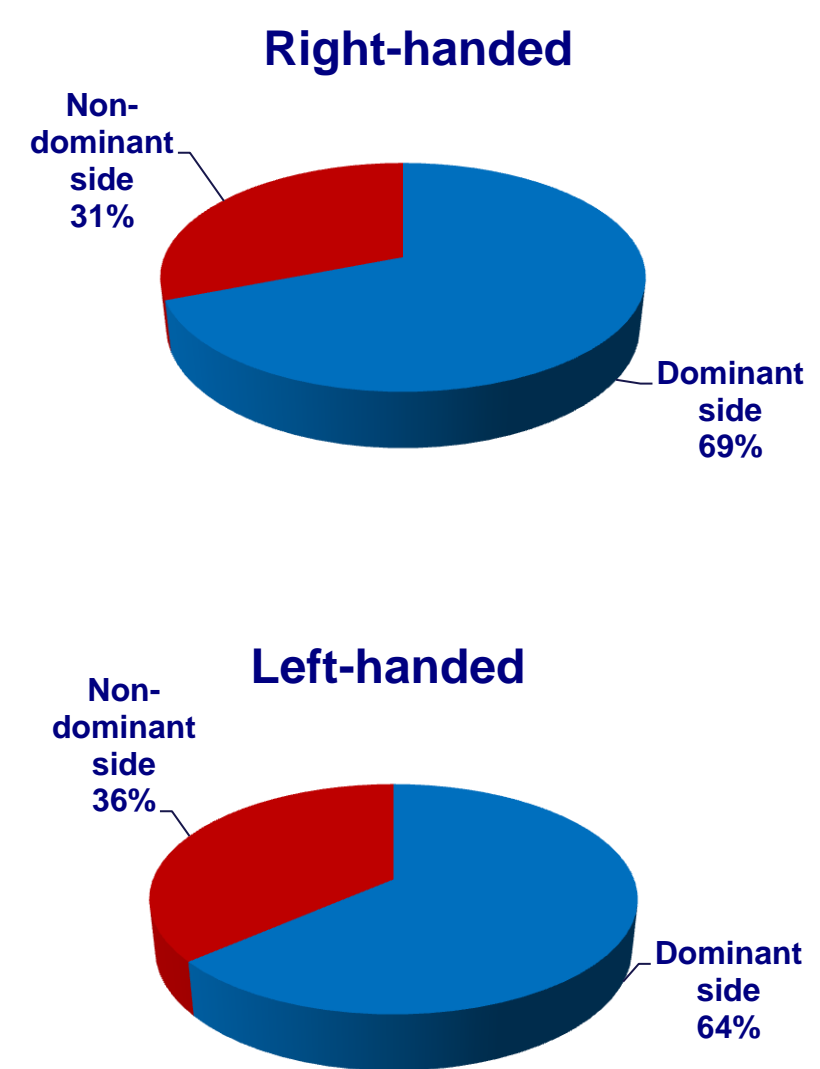


Figure 2: Site of initial symptom emergence

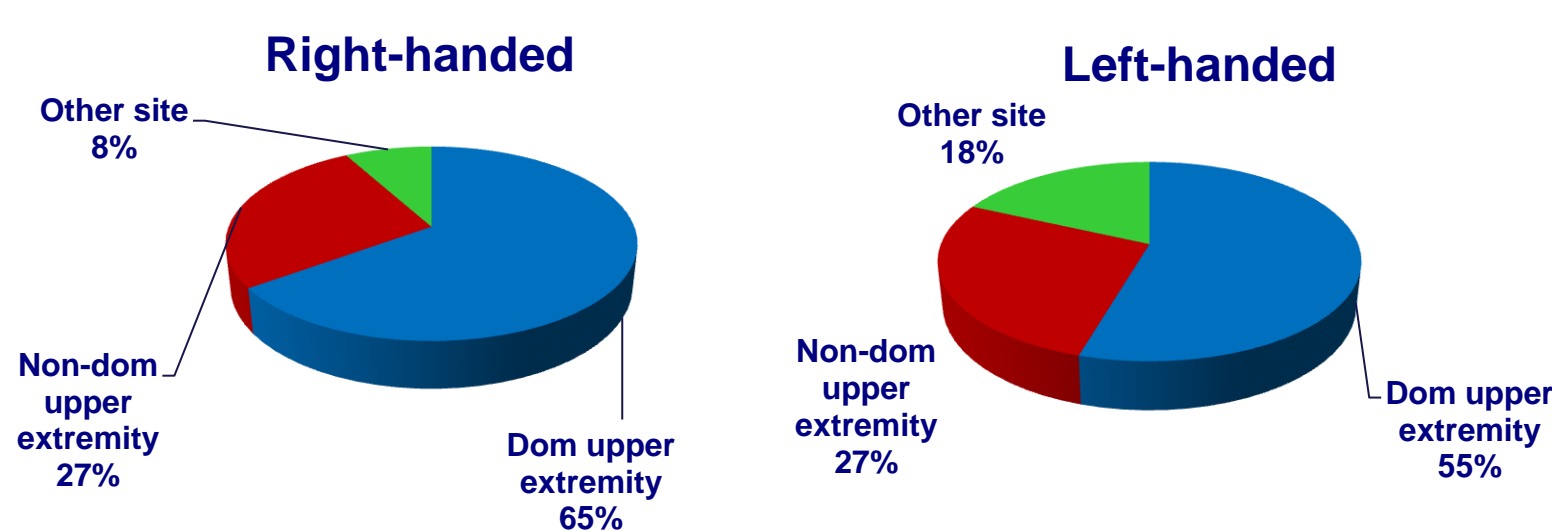
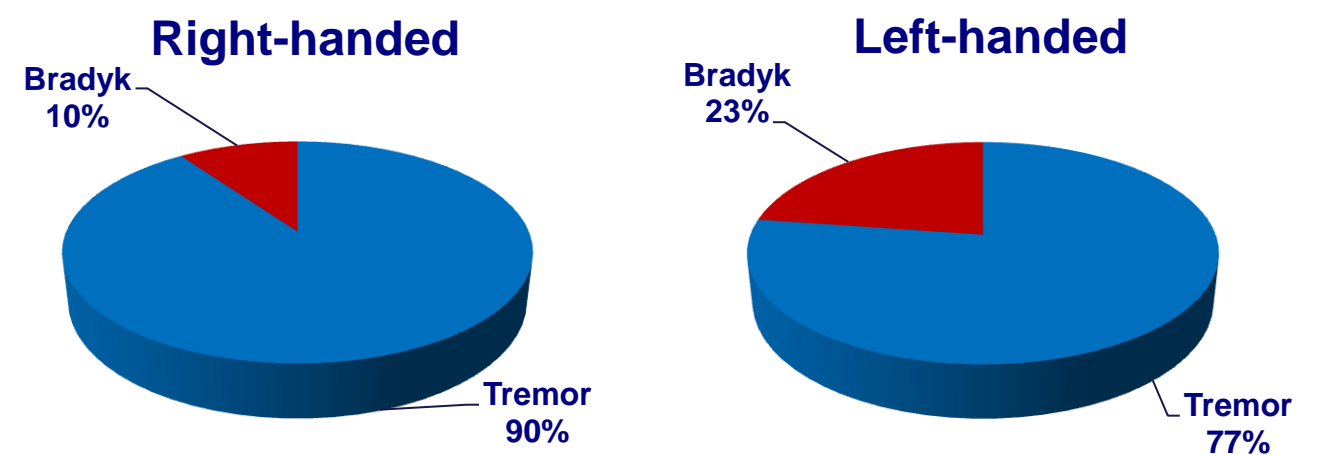


Figure 3: Initial symptom for patients with asymmetric onset



## RESULTS

403 computerized medical records were screened. 315 patient records met the inclusion criteria. 289/315 (91.7%) subjects were recorded as right handed, 24/315 (7.6%) as left handed, and 2/315 (0.7%) as ambidextrous.

In subjects with asymmetric onset (245/315, 78%), 91% (223/245) were R hand dominant (RHD) and 9% (22/245) were L hand dominant (LHD). **Motor symptoms emerged first on the dominant side in 69% (154/223) of the RHD group and 63.6% (14/22) of the LHD group. This association was statistically significant (p= 0.004).**

**Tremor was the most commonly recalled initial symptom in both groups with asymmetric onset.** [201/223 (90% in RHD), 17/22 (77% in LHD), p=0.139]. Bradykinesia was the only other initial motor symptom recalled [22/223 (10% in RHD) and 5/22 (23% in LHD) groups, respectively].

**Dominant upper extremity was the most common site of initial symptom emergence** [65% (145/223 in RHD), and 54.5% (12/22 in LHD) groups, respectively] followed by the contralateral upper extremity 27% in each group. (60/223 in RHD) and (6/22 in LHD).

## CONCLUSION

**Handedness has predictive value with respect to the side of onset of motor disease**, in Veterans with Parkinson's disease; however it did not seem to confer any specific predisposition with regards to the type of symptom or its distribution on the effected side.

## References

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