

Asymmetrical Alien Hands in Corticobasal Degeneration

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Introduction

Corticobasal degeneration is characterized by many signs. One of these signs is “alien limb” Alien limb can be seen in patients with anterior corpus callosum strokes. Alien limb is also seen in corticobasal degeneration. This behavior is characterized by movement of arms without the intention to move them. The behavior is triggered by tactile or visual stimuli.

Approach or avoidance behavior can be seen with corticobasal degeneration, however both behaviors are typically not seen in the same patient.

Experimental

Structural imaging was performed using the MBI-UF AMRIS Siemens 3T head only scanner.

The patient showed both approach and avoidance behavior, with avoidance behavior shown on the right hand and approach behavior on the left hand. Asymmetrical deficits in the upper extremities, parkinsonian features and ideomotor, limb-kinetic and oro-facial apraxias were present. There was virtually no speech output, but comprehension was preserved as was gait.

After the patient’s death, an autopsy was performed.

Results and Discussion

Marked asymmetrical atrophy was seen. Left parietal atrophy was greater than right parietal atrophy. Left frontal atrophy was slightly greater than right frontal atrophy.

Preservation of speech comprehension and gait in the presence of speech apraxia along with asymmetrical motor deficits and parkinsonian features are consistent with corticobasal degeneration.

Autopsy results were consistent with corticobasal degeneration as Tau positive cytoplasm in neurons of the cortices as well as Tau positive glia in the subcortical white matter were seen.

Conclusions

We suggest that the hemispheric ratio of frontal to parietal atrophy is relevant to the contralateral limb showing either approach or avoidance behavior. Greater atrophy in the parietal lobe compared to the frontal lobe is thought to result in avoidance behavior. Greater atrophy in the frontal lobe compared to the parietal lobe is thought to result in approach behavior.

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References

FitzGerald, DB, et al, Asymmetrical Alien Hands in Corticobasal Degeneration, *Movement Disorders* **22**(4) 581-584 (2007)