



A comprehensive team approach to the diagnosis and functional rehabilitation of a patient with limb kinetic and ideomotor apraxia and apraxia of speech.

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CASE PRESENTATION

A 55 y/o right-handed male with a history of hypertension and traumatic left SDH status-post craniotomy and cranioplasty, altered mental status following seizures presented to acute inpatient rehabilitation (AIR) with gait disorder, ADL impairments and cognitive deficits. Physical exam showed confusion to place and time, MMT 5/5 left side, 4/5 in RUE, 5/5 in RLE, with normal sensation and proprioception. On initial PT evaluation, isolated knee extension caused hip, knee, elbow, wrist flexion with cervical extension. Interestingly, ambulation within parallel bars was normal, but with assistive device, circumducted, adducted and internally rotated RLE. OT found impaired gross motor coordination, dynamic reaching, and hand eye coordination of the RUE. SLP found mild-moderate expressive and receptive aphasia and moderate verbal apraxia characterized by uncoordinated motor movements and disfluent speech. Subsequently, physicians found the patient used his finger and hand as the object when asked to demonstrate combing hair or brushing teeth.

IMAGES

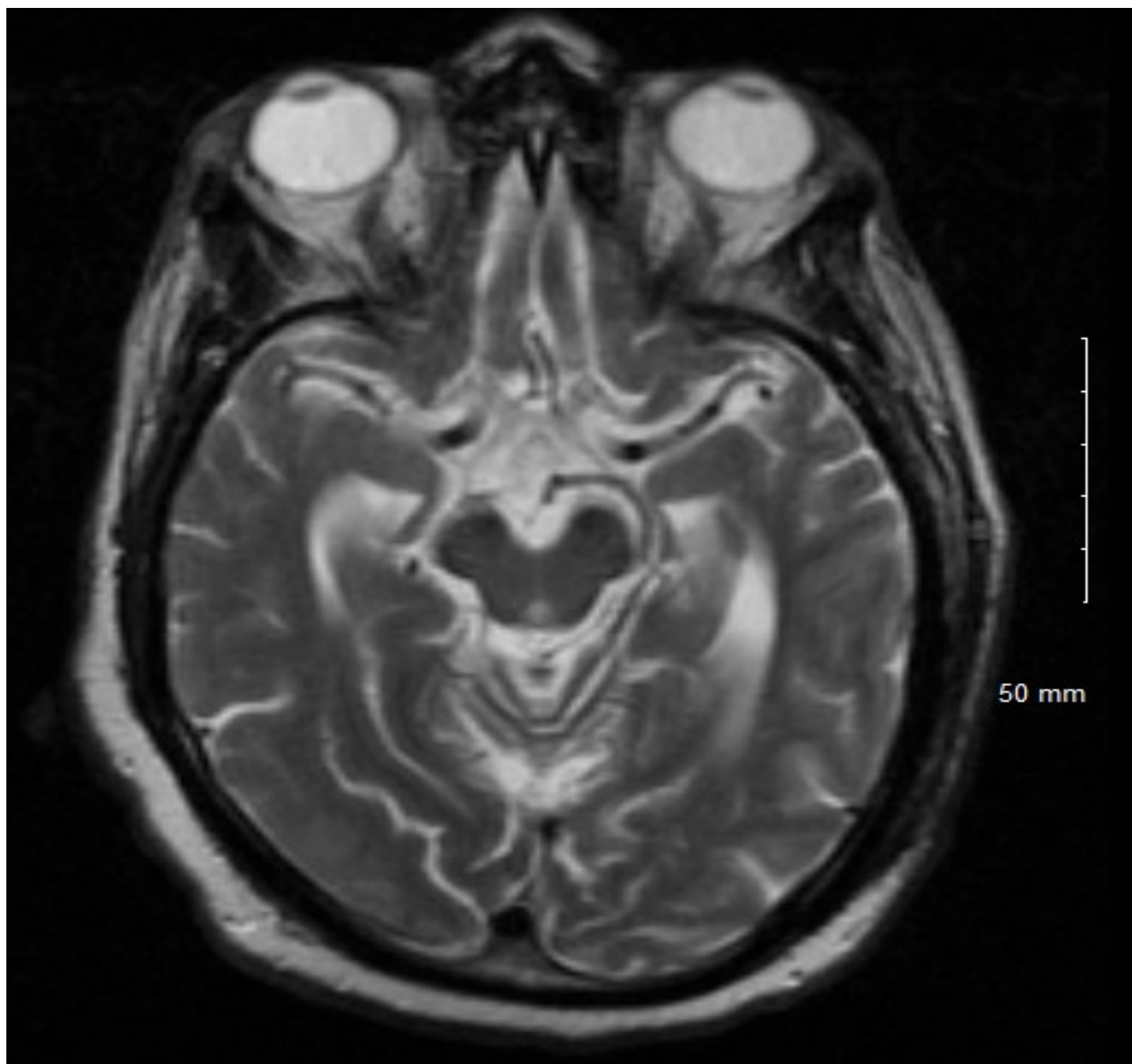


Figure 1. T2 weighted MRI shows hyperintensity in the left frontoparietal area (right side of figure) and left hemi-craniotomy and cranioplasty.

Limb Apraxias			
Apraxia Type	Characteristics	Example	Lesions site
Ideational	Patient cannot use objects. Patient does not understand the purpose of an object. Patient does not know correct sequence of actions.	Give patient a toothbrush and the patient does not know what it is for. The patient may brush hair with it.	Inferior parietal lobule
Ideomotor	Failure to execute complex motor movements. -The patient understands commands but cannot execute proper motor movements to execute the command. Inability to pantomime tool use.	-Give toothbrush/comb, patient may hold the toothbrush/comb upside down and circle around the head.	Premotor cortex Intraparietal sulcus Inferior parietal
Limb-Kinetic	Impairments in fine movements and awkwardness of limbs.	Impairments in picking up coin. Impairments in dressing. Abnormal gait pattern.	Premotor cortex

Apraxia of Speech vs. Aphasias			
Apraxia/Aphasia	Characteristics	Example	Lesion site
Apraxia of Speech	Intact comprehension. Normal speech output or attempted output. Oral motor planning deficits, groping, hesitations, repetition of sounds, disfluent speech, patients benefit from visual modeling of articulatory postures.	Difficulty repeating words. Distorted speech.	Premotor cortex area 55b ?Insula
Expressive (Broca's) Aphasia	Intact comprehension. Paucity of speech. Expressive language disorder: word-finding deficits, difficulty forming sentences, poor grammar.	Patient knows what they want to say, but cannot get words out.	Inferior frontal lobe
Receptive (Wernicke's) Aphasia	Impaired comprehension. Fluent speech, but typically nonsensical speech with <u>paraphasiac</u> errors and neologisms. Difficulty following commands.	Patient speaks fluently, but content does not make sense.	Superior temporal gyrus

Figure 2. Limb apraxias and apraxia of speech.

DISCUSSION

Patients are not necessarily admitted to AIR with their diagnoses labelled. Due to the rehabilitation team approach to evaluation, we appreciated that our patient had (rare) limb kinetic apraxia, ideomotor apraxia and apraxia of speech—not inconsistent with the location of the patient's lesion. PT utilized theraband to promote dorsiflex isolation from knee flexion. Gait speed with right limb strapped to rolling walker improved from 0.5m/sec to 1m/sec. He couldn't negotiate stairs due to motor planning difficulty. OT used targeting tasks with weights on UE and incorporated bilateral integration in ADL tasks. ADLs improved from moderate to set-up assistance. SLP used naming, repetition, and automatic speech with oral motor placement cues and pacing by hand tapping leading to improvements in articulation.

CONCLUSIONS

A comprehensive team approach can be extremely effective for diagnosis and functional rehabilitation even in patients with multifaceted, complex apraxia.