Post Stroke Apraxia: Types and Management

Essay

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By

Amr Ali Mohammed Abdel-Aziz Elmarakby
M.B.B.Ch

Supervised By

Prof. Dr. Samia Ashour Mohamed Helal
Professor of Neurology and Psychiatry,
Faculty of Medicine, Ain Shams University

Prof. Dr. Hany Mohamed Amen Aref
Professor of Neurology and Psychiatry,
Faculty of Medicine, Ain Shams University

Prof. Dr. Salma Hamed Khalil
Professor of Neurology and Psychiatry,
Faculty of Medicine, Ain Shams University

Faculty of Medicine
Ain Shams University
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Amr Ali Elmarakby

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List of Abbreviations

AAC	**:**	Alternative and/or augmentative communication
ACA	**:**	Anterior Cerebral Artery
ACS	**:**	Activity Card Sort
ADLs	**:**	Activities of daily living
ALO	**:**	Apraxia of lid opening
AMERIND	**:**	American Indian Hand Talk
ANOVA	**:**	Analysis of variance
AOS	**:**	Apraxia of Speech
CAS	**:**	Childhood Apraxia of Speech
CBD	**:**	Corticobasal ganglionic degeneration
CNS	**:**	Central Nervous System
COMA	**:**	Congenital ocular motor apraxia
COPM	**:**	Canadian occupational performance measure
CSF	**:**	Cerebrospinal fluid
CT	**:**	Computerized Tomography
CTA	**:**	Computed tomography angiography
CVA	**:**	Cerebrovascular Accident
ECG	**:**	Electrocardiography
EEG	**:**	Electroencephalography
EFNS	**:**	European Federation of Neurological Societies

List of Abbreviations (Cont.)

EMG	**:**	Electromyography
EPG	**:**	Electroplatography
FDA	**:**	Food and Drug Administration
fMRI	**:**	Functional magnetic resonance imaging
IA	**:**	Ideational Apraxia
ICA	**:**	Internal Carotid Artery
ICH	**:**	Intracerebral Hemorrhage
IMA	**:**	Ideomotor Apraxia
LAT	**:**	limb apraxia test
LHD	**:**	Left hemisphere brain damage
MCA	**:**	Middle Cerebral Artery
MIT	**:**	Melodic intonation therapy
MOT	**:**	Multiple object tasks
MRA	**:**	Magnetic resonance angiography
MRI	**:**	Magnetic Resonance Image
NPH	**:**	Normal pressure hydrocephalus
OA	**:**	Optic Apraxia
OMA	**:**	Ocular Motor Apraxia
OKN	**:**	Optokinetic nystagmus
ORLA	**:**	Oral reading for language in aphasia
OT	**:**	Occupational therapy
PCA	**:**	Posterior Cerebral Artery

List of Abbreviations (Cont.)

PEG	**:**	Percutaneous Endoscopic Gastrostomy
PET	**:**	Positron emission tomography
PICA	**:**	Porch index of communicative ability
PPC	**:**	Posterior Parietal Cortex
PROMPT	**:**	Prompts for Restructuring Oral Muscular Phonetic Targets
PSP	**:**	Progressive Supranuclear Palsy
PT	**:**	Physical Therapy
RAS	**:**	Rhythmic auditory stimulation
RCT	**:**	Randomized clinical trials
RHD	**:**	Right hemisphere brain damage
SAH	**:**	Subarachnoid Haemorrhage
SMA	**:**	Supplementary Motor Area
SPECT	**:**	Single-photon emission computed tomography
TBL	**:**	Team-Based Learning
TBI	**:**	Traumatic Brain Injury
TIA	**:**	Transient Ischemic Attack
VOR	**:**	Vestibulo-Ocular Reflex
WHO	**:**	World Health Organization

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Introduction

Knowledge of stroke and the process of recovery after stroke have developed enormously in the late 20th century and early 21st century. It was not until the year 1620 that Johan Wepfer, by studying the brain of a pig, came up with the theory that stroke was caused by an interruption of the flow of blood to the brain. This was an important breakthrough, but once the cause of strokes was known, the question became how to treat patients with stroke ***(Gallichio, 2004).***

For most of the last century, people were actually discouraged from being active after a stroke. Around the 1950s, this attitude changed, and health professionals began prescription of therapeutic exercises for stroke patient with good results. Still, a good outcome was considered to be achieving a level of independence in which patients are able to transfer from the bed to the wheelchair without assistance. This was still was a fairly bleak outlook, but the situation was improving ***(Gallichio, 2004).***

In the early 1950s, Twitchell began studying the pattern of recovery in stroke patients. He reported on 121 patients he had observed. He found that by four weeks, if there is some recovery of hand function, there is a 70% chance of making a full or good recovery. He reported that most recovery happens in the first three months, and only minor recovery occurs after six months. More recent research has demonstrated that significant improvement can be made years after the stroke ***(Watkins et al., 2002).***

Apraxia is one of the most important and least understood major behavioral neurology syndromes. It is one of the best localizing signs of the mental status examination and also predicts disability in patients with stroke or dementia (unlike aphasia). Patients with apraxia cannot use tools; therefore, they are unlikely to perform activities of daily living well. Patients with aphasia,without coexisting apraxia, can live independently, take the bus or subway, and lead a relatively normal life; a patient with significant limb apraxia is likely to remain dependent ***(Heilman &Rothi 1993).***

Apraxia is not a disease but a syndrome; consequently, it has no attributable morbidity or mortality ***(Aboitiz, 2003).***

Dyspraxia is Impairment in new learning of motor patterns and sequences i.e. developmental (related to pediatrics) ***(Cermak, 1985).***

Apraxia is a disorder of learned movement i.e. previously able and now this ability is absent (related to acquired brain injury) ***(Grieve and Gnanasekaran, 2008).***

Apraxia is a complex higher order cognitive-motor deficit ***(Leiguarda & Marsden, 2000).***

Apraxia is an "inability to perform skilled sequential purposeful movement" ***(Banich, 2004).***

Apraxia is a cognitive motor disorder that involves the loss or impaired ability to programme motor systems to perform purposeful, skilled movements" ***(Zoltan, 2007).***

The root word of apraxia is praxis, Greek for an act, work, or deed. It is preceded by a privative a, meaning without ***(Geschwind, 1975).***

Apraxia is due to lesion in the left hemisphere and the left parietal lobe due to impact of language ***(Stein et al., 2009).***

Apraxia is not just the Left Parietal Lobe affection it can be:

Bilateral distribution ***(Hanna-Pladdy et al., 2001).***

Occipital and temporal lobe ***(Makuuchi et al., 2005).***

Left frontal lobe ***(Haaland et al., 2000).***

Basal Ganglia ***(Kompoliti and Verhagen 2010).***

80% of patients with apraxia are also aphasic there is Close relationship between apraxia and aphasia well researched the Exact impact of each on other remains poorly understood and there is a Clear evidence one can exist without the other ***(Papagno et al., 1993).***

Recovery of apraxia should not be goal for rehabilitation; treatment involves teaching compensatory technique use for impairments but does not cure apraxia, and will not improve underlying impairments, the aims to enable more independent function despite presence of apraxia, and Minimize extent to which impairment influences performance of daily life ***(Buxbaum et al., 2008).***

Strategy training is a Focus on teaching ways to compensate for impairment, Compensation can be internal or

external, Incorporates error less learning through practice & repetition, The individual is guided through the tasks but is not allowed to make errors, When repeating and practicing the task only the correct sequence of actions will be learnt to successfully completed the task ***(Van Heugten et al., 1998).***

Aim of the work

The aim of the present study is to:

1. Highlight the clinical impaction of apraxic manifestations in post stroke patient

2. Discuss the role of rehabilitation in improving the quality of life those patients.