

**Critical Review:
Effectiveness of Speech Therapy for Individuals with Primary Progressive Aphasia**

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Primary Progressive Aphasia (PPA) is a focal dementia syndrome with deterioration of language functions but relative preservation of other cognitive functions for at least the first two years of the disease. This paper critically reviews nine studies of communication treatments for individuals with PPA. These treatment regimes include behavioural training (phonological and lexical/semantic), training with alternative and augmentative (AAC) techniques, combined therapy approaches, high frequency repetitive Transcranial Magnetic Stimulation (hf-rTMS) and Attentive Reading and Constrained Summarization (ARCS). The outcomes of these studies provide persuasive evidence of the value of speech therapy for individuals with PPA, although more research is required in this area.

Introduction

Primary progressive aphasia (PPA) is a focal dementia characterized by an isolated and gradual dissolution of language (Mesulam, 2001). It is a progressive disorder in which language abilities may decline for many years prior to any manifestation of cognitive symptoms. Expression often is compromised earlier than comprehension, with word finding or motor issues frequently being the first symptoms. Diagnosis of PPA requires that the patient has experienced isolated progressive language decline for at least two years while all other mental faculties, such as memory, visuospatial skills, reasoning and personality remain relatively intact (Mesulam, 2001). Neuropsychological testing is often used for this purpose, but must be compared with clinical findings, as many of these tests have some overt or covert reliance on language.

Brain imaging may also be used in the diagnosis of PPA, looking at atrophy or abnormalities in blood flow and metabolism in the language centres of the brain. (Mesulam, 2001). Language symptoms, especially naming difficulties, may emerge prior to any brain scan abnormalities.

Unlike aphasia post trauma, which can often be matched to a clinicopathological pattern (i.e. Broca's, conduction, etc.), PPA rarely fits into these classical patterns and there is no single type of language dysfunction that is pathognomic for PPA. Word finding difficulty is often the first symptom to appear in patients with PPA. Auditory and reading comprehension is often relatively preserved early on, but generally decays to the point where even single words cannot be understood. Agrammatism, also often present as the disorder progresses, can lead to

the near mutism, or highly telegraphic speech, filled with circumlocutions, fillers, paraphasias and, in the later stages, neologism (Mesulam, 2001). Reading and writing difficulties, while often preserved early on, are compromised in later stages. In the terminal stages of the disease, the production and comprehension of language are both severely compromised, with possible cognitive and behavioural changes at this stage. These highly variable profiles present difficulties with research validity and reliability, making it difficult to collect a base of strong evidence.

This is a topic of clinical and research importance. PPA has a devastating effect on the lives of the patients and their families. It is imperative we use evidence based practice to inform our decisions regarding treatment, both to provide optimal therapy to our patients and to use the limited resources we may have effectively and efficiently.

Objectives

The primary objective of this research paper is to critically review the literature on communication treatments carried out by speech-language pathologists for patients with PPA, examining the effectiveness of speech therapy for this population. The secondary objective of this paper is to provide evidence-based recommendations for continued research in this area, as well as clinical implications for future treatment.

Methods

Search Strategy

Internet databases, including SCOPUS: Health Sciences (>5300 journals) and Social Sciences

(>2800 journals) and PubMed (>4500 journals) were searched with the following terms:

(speech language pathology) AND (primary progressive aphasia)

(speech therapy) AND (primary progressive aphasia)

(therapy) AND (primary progressive aphasia)

The search was limited to articles written in English. There was no limitation on the date of articles.

Selection Criteria

Studies selected for review in this critical review were required to address a protocol designed to improve communicative effectiveness, and must include at least one individual diagnosed with PPA. The diagnoses must show isolated language decline without cognitive decline. Outcome measures for the

can be viewed in against the background of the progressive nature of the disorder, increasing the validity. The results must be viewed warily though, as there may have been other factors associated with the treatment that had an effect on the progression of the disorder, or unknowns about the progression of the disorder itself, which could confound the data. Further study on phonological processing and the effect of modified auditory input are warranted.

Schneider et al (1996) present a single subject multiple baseline study looking at the effectiveness of verbal combined with gestural treatment on the acquisition and generalization of the verb tenses in a subject with PPA using a matrix training procedure. The subject presented with a non-fluent language impairment consistent with agrammatism and showing more severe impairment in spontaneous speech tasks than formal testing. Post-treatment scores showed an improvement in both trained and untrained words and tenses in the context of simple SVO sentences, which were maintained at the 3 months post-treatment, except in spontaneous speech measures. Gestural pairing appeared to have a large effect and was controlled for with a reversal

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Pattee et al(2006) report a case study in which they compared two AAC strategies on communicative effectiveness in an alternating treatment design. The two strategies are training the participant on a text-to-speech device (ACD), the LightWriter (Toby Churchill, Cambridge, UK) and American Sign Language (ASL). The participant, a 57 year old female, presented with severe Apraxia of Speech (AOS) and impaired expressive communication as the disease progressed. Her receptive communication was within functional limits on formal testing. The study was conducted over a period of 9 weeks with two baseline data collection sessions, 8 treatment sessions and three post-treatment data collection sessions. Output was transcribed and analyzed using an adapted form of the Nicholas and Brookshire (1993) correct information unit (CIU) protocol. In both modes, treatment sessions consisted of the

concerning. Because the entire test was administered numerous times, and part of the profile of PPA is lack of cognitive decline, learning/memorizing of the tasks may have occurred to some degree. While this study has reported some interesting and suggestive findings, additional rTMS studies are required to strengthen this efficacy evidence.

McNeil et al (1995) present a hybrid single subject experimental design, with components of multiple baseline, multiple probe, and withdrawal designs. A dual treatment protocol, consisting of behavioural and pharmacological treatment, was used. The subject was a 61 year old male, GP, who presented with a mild linguistic processing deficit, with no deficits in other areas of processing and a rapidly progressing spastic dysarthria. Within the design of the study, multiple baseline sessions were conducted to assess GP's performance on a list of several potential treatment targets as well as standardized speech and language tests and connected speech samples. Subjects were asked to produce either synonyms or antonyms for predicative adjectives, with the application of a cuing hierarchy when necessary to facilitate word retrieval. The pharmacological treatment, dextroamphetamine, was administered daily. Data was collected from both behavioral only and behavioural plus pharmacological phases of the study. Results showed an increase in ability to name the treated items as

Increasing the number of modalities in which the patient can communicate appears to have a positive influence on their communication, though more research is necessary.

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