

Importance Of Identifying Comorbidity of Apraxia with Aphasia: Illustration Through Case Study

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Abstract

Aphasia is an acquired language disorder caused due to the insult to the brain. Aphasia can be dichotomously classified as non-fluent and fluent aphasia. Apraxia can be seen as a co-morbid condition in non-fluent aphasia especially Broca's aphasia. Hence it becomes important to identify the co-morbidity factor, if the apraxia component goes unidentified, it can affect the prognosis. The current study presents one such case diagnosed with Broca's aphasia, the apraxia component was not identified during the assessment session, during the course of intervention. The apraxia component was identified following which the condition improved relatively. Hence it becomes important to identify the co-morbidity.

Kew Words: non-fluent aphasia; prognosis; efficacy; response to intervention; co-existence

Introduction

Aphasia is described as "an acquired communication disorder caused by brain damage, characterized by an impairment of language modalities: speaking, listening, reading and writing [1]. Aphasia can cause due to stroke, traumatic brain injury and tumors. Stroke is a predominant cause as far as aphasia is concerned. Stroke can interrupt the blood flow leading to oxygen deprivation, owing to this there would be irreversible damage to the neuronal tissues. Several classifications of aphasia have been proposed till date, however dichotomously aphasia can be classified as fluent and non-fluent aphasia. Persons with non-fluent aphasia would have problems in speech production while persons with fluent aphasia can speak fluently but in a meaningless manner as comprehension would be affected in this variant. Conditions such as dysarthria or apraxia can co-exist with Aphasia. Apraxia is described as a disorder of neurological origin, the core deficit in apraxia would lie in the capacity to plan or program the sensory-motor commands, these sensory-motor commands are found to be essential in regulating the movements that is necessary to produce phonetically intact segmental speech which is peppered with appropriate supra-segmental speech [2]. Apraxia of speech can be associated with nearly 6.9% of the cases with acquired brain damage [3]. The site of lesion would converge across aphasia and apraxia owing to which aphasia and apraxia can co-exist in general and a specific variant of aphasia 'Broca's aphasia' often shares greater co-morbidity with Apraxia compared to the other variants. Persons with Broca's aphasia demonstrate effortful and telegraphic speech, characteristics such as groping, inconsistent articulatory errors can be seen in apraxia and these characters are seen in combination when Broca's aphasia and Apraxia co-exist. It is note-worthy that AOS in the purest form does not exhibit a deficit in language, or aphasia hence aphasia with apraxia can be considered as a combat of speech and language disorder [4]. Empirical tests for aphasia and apraxia have to be administered explicitly for unveiling the deficits in

aphasia and apraxia [5]. The treatment also is expected to address both these key issues for the intervention to be effective [6]. The current case report highlights the importance of identifying apraxia with aphasia and the challenges in identification in the absence of medical reports.

Methods

The client was 37.4 years old male when he reported to a leading institute in speech and hearing. He was from southern part of India (Tamil Nadu) and was multilingual with being able to comprehend, speak, read and write 4 languages [(Native language-Tamil), (Non-native language-Kannada, Hindi and English)]. He attained education till the SSLC grade and was a coolie worker in Mysuru (Karnataka). His core family included his wife and mother. The client's main complaint was the inability to speak and weakness of both upper and lower limbs on the right side following the stroke. H/o stroke 2 months back and was unconsciousness for 4 days. He consulted district hospital in Mysuru (Karnataka) post stroke and was diagnosed to have cerebrovascular accident (CVA) with unknown site of lesion. Other premorbid medical history included medication for diabetes for 6 years. The client had become emotionally weak and was easily getting frustrated and demotivated over simple failures. Pre morbid handedness was right and the post morbid handedness is left. Writing with right hand with difficulty is seen and the subsequent script is less intelligible with spelling error especially in clusters and the speed of writing is also reduced.

The speech mechanism examination revealed deviated lips towards right side and slight asymmetrically. Even jaw a symmetry was observed. The strength, range of motion, accuracy, steadiness and tone was found to be fair. The Western Aphasia Battery [7] was administered to tap the speech and language abilities of the individual. The client's score was 2 on spontaneous

speech, 1.25 on auditory comprehension, and 0 on the repetition and naming domains. The Aphasia Quotient (AQ) was 6.5 and was diagnosed as Global aphasia. Though recommendations were made for speech and language therapy, he did not avail any intervention due to personal reasons as stated. He revisited the institute after 6 years. The clients score on spontaneous speech and auditory comprehension had improved to 3 and 4.7 respectively. No improvement in repetition and naming domains. The Aphasia Quotient was 15.2 and was diagnosed as Broca's aphasia. He attended the regular speech therapy for 3 months (weekly thrice, 45 minutes session each). Further re-evaluation was done after 6-7 months and the scores obtained was 4 on spontaneous speech, 5.8 on auditory comprehension, 0.3 on repetition and 0.1 on naming. The Aphasia Quotient was 20.4. Score under praxis domain was 51/60. Sentence repetition task, multisyllabic word repetition task and tasks from Apraxia Battery for Adults were screened and the features such as more clear and better single syllable production, increasing complexity with increasing word length, automatic utterances better than voluntary speech, sequential motion rate better than alternate motion rate, groping of articulators, difficulty with sound sequencing, etc suggested a possible diagnosis of Apraxia of speech as well. Hence, the diagnosis made was Broca's aphasia with Apraxia of speech.

Discussion

After identifying apraxia, regular speech therapy for 3 months was continued (weekly thrice, 45 minutes session each). Again, the 6 months follow up results indicate a score of 8 in spontaneous speech, 6.45 on auditory

comprehension, 0.8 on repetition and 32.5 on naming. The diagnosis of Broca's aphasia with Apraxia of speech was retained. He started to avail speech and language therapy after the second evaluation due to personal reasons. The client showed a remarkable progress after the intervention following the third evaluation. Manual for Adult Aphasia Therapy in Kannada (MAAT-K) by Goswami et al., 2015 was used to make a baseline assessment of the individual and subsequently it served as the basis to select the targets for the intervention. The following goals were targeted during the therapy: To improve functional communication skills to a consistency of 50%-75% using verbal mode of communication (with help of orthographic cues), To improve the expression of contrast words to a consistency of 50%, to work on expression of Activities of Daily living, to improve his quality of life and to improve the repetition skill of the client to a consistency of 50-75%. Cuing was used for intervention of aphasia. The eight step continuum by Rosenbek et al., 1973 [9] with integral stimulation technique being the key element was practiced to focus specifically on the apraxia component during the therapy sessions. He progressed during the sessions and was able to distinguish the voicing feature, more precise single word production without prompting, better ability with producing the sound sequences, etc.

The outcomes depict that the client did not show significant improvement until the diagnosis of Apraxia of speech was made and the intervention plan focusing specifically on Apraxia of speech was targeted.

TEST ADMINISTERED:WAB	Date: 23/03/2017	Date: 20/03/2023	Date: 30/10/2023	Date: 16/04/2024
Spontaneous speech	02	03	04	08
Auditory comprehension	1.25	4.7	5.8	6.45
Repetition	0	0	0.3	0.8
Naming	0	0	0.1	1
Aphasia Quotient (AQ)	6.5	15.2	20.4	32.5
Impression	Global Aphasia	Broca's Aphasia	Broca's Aphasia with Apraxia of speech	Broca's Aphasia with Apraxia of speech

Table 1: Evaluations carried out at different timelines

As illustrated in the above-mentioned table, the client did not show remarkable progress even after 6 years of reporting and the client showed very little progress. Even after reporting back after a hiatus of 6 years, the client showed limited progress and the WAB scores showed only slight improvement. Difficulty in configuring the articulators and groping behavior lead to the identification of apraxia and eventually in the next 6 months, the client showed progress, however even after showing note-worthy progress deficits persist and these issues is to be addressed in future. It is note-worthy that the medical reports were not available in this client, this imposed greater challenge in identifying apraxia and the response to intervention method lead to improvement.

Conclusions

Apraxia can co-exist with aphasia due to the proximity in the site of lesion. In cases where medical imaging is not available the challenges are even more. Clinical expertise would come into picture in identifying the co-morbidity of apraxia, if apraxia goes unidentified it would impose greater challenges in the phase of recovery. Hence it becomes important in screening cases of Broca's aphasia for apraxia.

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