INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH & DEVELOPMENT

ISSN: 2278 – 0211 (Online)

Communication Profiling In Client With Crossed Aphasia: A Case Report

Rashmi Ananth Pai
M.A.S.L.P
Assistant Professor, Department of Audiology and Speech Language Pathology,Kasturba Medical College, Manipal University,Mangalore, India

Dr. Jayashree Bhat
Ph.D
Head of the Department, Department of Audiology and Speech Language Pathology, Kasturba Medical College, Manipal UniversityMangalore, India

Abstract:

Background *Crossed aphasia (CA) which is secondary to single neurological event localized in the right hemisphere of right dextrals results in a variety of communication disorders (Murdoch, 1990). However owing to the diversity of the disorder, it has always been a controversial issue in research. Kirshner et al (2009) reported that syndromes from the left hemisphere injury in a left dextrals may be milder or more selective than those of right.*

Objective *In view of the existing knowledge, the profiling of communication behavior secondary to right middle cerebral artery infarct would be of interest and so the present study focuses on the same.*

Method *This study followed a single case study design. A 50 years old male with a complaint of communication problem following traumatic brain injury 3 months ago was considered for the study. A detailed communication assessment of receptive and expressive language; speech production; deglutition and secondary language skills was carried out using clinical observation and standardized tests.*

Results and Discussion *The client communication profile revealed preserved receptive language as compared to expressive language. Bakar et al (1996) also reported severe global aphasia and Broca's aphasia following CA. As for the expressive difficulties, Zangwill (1979) hypothesized that the right hemisphere can take over some aspects of language in bilinguals and multilinguals because the left hemisphere is overloaded. In our client, naming and repetitions skills were both affected in contrast with Geraldine et al's (2009) observation of less errors in repetition in CA. Moreover automatized speech and right hemispheric skills were well preserved. Tatlidede et al's (2011) findings differed from that of ours with fluctuating speech rate and intermittent word-finding pauses along with rare phonological errors in CA. In line with their observation, we also observed adequate secondary language skills. Voice and deglutition functions were normal. Laeknabladid (2009) observed prosodic difficulties and phonological problems in his clients. These observations tempt us to consider CA as a syndrome rather than a unified disorder.*

Conclusion *It is concluded from our study that the communication errors in crossed aphasia cannot be generalized, and that individual differences are generally expected. So, it is mandatory to profile the communication errors after administering detailed language, speech and swallowing patterns which would intern direct appropriate intervention plan.*

Keyword: *Crossed aphasia (CA)*

Introduction

Traumatic brain injury (TBI) can cause a variety of communication problems. Head injury may be associated with speech disorders, language disorders or both depending on the location of the damage to the nervous system (Murdoch 1990).

Head injury can be divided into two major types: open head injuries wherein the brain or meninges are exposed and closed head injuries wherein the meninges remain intact even though the skull may be fractured. Following head injury a patient may suffer from a number of complications which include: concussion, contusion, laceration and skull fracture; vascular lesion, infections, increased intra-cranial pressure; rhinorhea and otorrhea; cranial nerve lesion; focal brain lesions; post-traumatic epilepsy; and post-traumatic vertigo. Speech and language deficit in concern with presence or absence of aphasia in closed head injury has been a highly controversial topic (Murdoch 1990).

Crossed aphasia(CA) is a term coined by Bramwell in 1899 to refer to language dysfunction appearing after right hemispheric brain lesions in dextrals(Moretti R et al 2001). CA is rare, with the incidence estimated to be between 0.5 and 2 percent for stroke patients (Gloning et.al 1961; Zangwell 1967; Hecaen et al 1971). Age and sex distribution for patients with CA appear to be comparable to that for patients with uncrossed aphasia (Castro-Caldas, Confraria 1984). The characteristics of the communication disorder that constitute CA are diverse (Castro-Caldas A, &Confraria A 1984; Hartman DE, Briggs SJ, &Vishwanat B 1985; Alexander MP, Fischette MR, & Fischer RS 1989).Right hemispheric stroke aphasia (RHSA) rarely occurs in right- or left-handed patients with their language representation in right hemisphere (RH). For right-handers, the term crossed aphasia is used. Single cases, multiple cases reports, and reviews suggest more variable anatomo-clinical correlations.

Zangwill (1979) described a bilingual CA patient who displayed the same expressive difficulties in French as in English. He hypothesized that the right hemisphere can take over some aspects of language in bilinguals and multilinguals because the left hemisphere is overloaded, and concluded that, such cases represent CA in patients who are bilinguals and it is not different from the other cases of CA.

Language disorders are likely to be outcome of more general and more pervasive memory and cognitive deficits (Holland 1982).TBI subjects exhibit deficit in the prosodic, resonatory, articulatory, respiratory, and phonatory aspects of speech production (Theodoros DG et al 1994). There are very few attempts to study speech parameters in patients with TBI, and there is much more to explore in field of speech

therapy aspects for the CHI patients.Giovagnoli (1993) reported a case of a right-handed 50 year old female who developed aphasia at the clinical onset of a right hemisphere glioblastoma (GBM) who showed Wernicke aphasia and left spatial neglect.

Bakaret. al (1996) conducted case studies of 3 patients with crossed aphasia, including language testing, computed tomographic scanning, and functional imaging with PET or SPECT to see whether left hemisphere structures were metabolically depressed during the acute phase and, in 1 patient, during recovery. Two patients had severe global aphasia and 1 had Broca's aphasia. In all cases, computed tomographic scans failed to reveal any left hemispheric lesions. Functional imaging with PET or SPECT showed extensive hypometabolism or hypoperfusion in the right hemisphere, with initial reductions in the left hemisphere as well. In patient I, a follow-up PET image showed only persistent hypometabolism in the right hemisphere.

According to Kirsher (1995) the precise incidence of this type of anomalous language lateralisation is unknown, ranging from 1% to 13% of all patients with aphasia and being present in up to 38.5% of neurologically intact dextrals. It is an exception to the general rule that language and manual dominance share the same substrate. Its incidence is estimated to be around 1-2% of all dextral aphasics. Paghera, Mariën andVignolo (2003) reported that communication in crossed aphasia ranged from Wernickes aphasia to milder form of conduction aphasia. Crossed aphasic's brain does not mirror that usually seen in right handers since the right hemisphere lesion frequently affects both language and visuo spatial abilities.

Géraldine et al (2009) reported that, comprehension and repetition were less frequently impaired after Right hemisphere stroke aphasia (RHSA) than after left hemisphere stroke aphasia LHSA. Although the mean infarct size was similar in RHSA and LHSA with less posterior RHSA lesions (caudal to the posterior commissure). Comprehension and repetition impairments were more often associated with anterior lesions in RHSA.Laeknabladid (2009) reported a 60-year-old right dextral with stroke in the right hemisphere who exhibited Broca's aphasia and severe verbal apraxia along with prosodic difficulties involving intonation, stress and conversational vocal variations. Phonological problems were also present.

Demirtas-TatlidedeA et al (2011) reported a 57-year-old monolingual right handed female presenting with word-finding difficulties,who had no clinical history for brain damage to the left hemisphere, and no left handers in her family history. Her language comprised of simple, grammatically correct sentences with a fluctuating speech rate and

intermittent word-finding pauses with rare phonological errors. Sentence repetition tasks showed impairments with grammatically complex sentences. Comprehension, writing and reading were intact.

In view of the existing knowledge, the profiling of clients with crossed aphasia secondary to right middle cerebral artery infarct would be of interest from the point of teaching and research and so the present write up focuses on the same.

Methodology

This study was conducted at the Kasturba Medical College (Manipal University) and followed a single case study design.

A 50 years old male approached the department of Audiology and Speech Language Pathology with a complaint of communication problem following traumatic brain injury (cerebrovascular accident) 3 months ago. Client also had weakness on the left half of his body. Neurological and radio diagnostic investigations revealed right middle cerebral artery infarct manifested by left hemiparesis with crossed aphasia and left upper motor neuron facial palsy. Audiological evaluation revealed normal peripheral hearing bilaterally. Ophthalmic evaluation revealed normal vision on the right side with visual agnosia on the left. He was a right handed bilingual individual, with Malayalam as the dominant language.

Speech And Language Assessment

A detailed speech language and swallowing assessment was carried on. The test administered were ------

Western Aphasia Battery

Western Aphasia Battery (by AndrewKertesz 1982) was used to assess spontaneous speech, Comprehension, Repetition, Naming, Reading, Writing, praxis and construction skills. The score yielded was suggestive of Broca's Aphasia.

Mini Inventory of Right Brain Injury (by Pimental and Kingsbury 1989)

To examine parameters like visual processing, language processing, emotion and affective processing, general behavior and psychic integrity. The scores on severity rating scale suggested mild deviation from the normal.

Multi Dimentional Voice Profile

To asses fundamental frequency, Jitter and shimmer, and soft phonation index for voice. The test findings revealed no significant variations in voice parameters.

Digital swallowing work station

Digital swallowing work station was used to asses the EMG muscle activity, respiratory swallow coordination and cervical auscultation. Results revealed normal swallowing function.

The Overall Picture Was

Comprehension was found to be adequate for spoken conversations and understanding of descriptive events. He could follow single step commands, pointing task and polar questions but was unable to answer logical questions asked to him. He was able to recognize faces of family members with their names if given some cues. Expression was limited to single word utterances meaningfully for spontaneous speech with gestures but required prompts to elicit the responses. Speech was clear and intelligible. The naming skills were poor in him. Moreover prosody was particularly affected for both comprehension and expression. Automatized speech was retained. Repetition was fairly adequate for the monosyllables, but affected for bi/multisyllabic words wherein he was able to repeat only after many prompts for multisyllabic words with multiple errors. Client was unable to repeat words with blends and clusters.

As for the secondary language skills, client was able to read alphabets but with prompts. Also, he could match the object and written word. He was able to write his name consistently and performed well in copying words and writing numbers. The letters were legible and spellings were correct. Client had fairly good arithmetic skills. He could recognize the single digit number and perform addition, subtraction, multiplication and division with single and two digit numbers.

His drawing skills were found to be good. He was able to do line cancellation task, copying (picture) task, line bisection, drawing parts of human body and drawing clock without any neglect.

Results And Discussion

The client communication profile revealed preserved receptive language as compared to expressive language. Bakar et al (1996) had also reported severe global aphasia and Broca's aphasia following crossed aphasia. As for the expressive difficulties, Zangwill **(1979) has come up with an assumption that the right hemisphere can take over some aspects of language in bilinguals and multilinguals because the left hemisphere is overloaded. In our client, naming and repetition skills were both affected in contrast with** Geraldine et al's (2009) observation of less errors in repetition in crossed aphasia. **Moreover automatized speech and secondary language skills were well preserved as** were the other right hemispheric skills like humour and singing. Tatlidede et al's (2011) **findings were different from that of ours with fluctuating speech rate and intermittent word-finding pauses along with rare phonological errors in crossed aphasia. In line with their observation, we also observed adequate secondary language skills. The voice and deglutition functions were normal in the client. Laeknabladid (2009) had observed prosodic difficulties involving intonation, stress and conversational vocal variations in his clients. They also had interesting phonological problems such as total loss of so-called preaspiration. Paghera, Mariën andVignolo (2003) had reported a case with similar causative factor like that of our client, but the clinical picture of communication raged from Wernickes aphasia to milder form of conduction aphasia. These observations tempt us to consider crossed aphasia as a syndrome rather than a unified disorder.**

Conclusion

It is concluded from our study that the communication errors in crossed aphasia cannot be generalized, and that individual differences are generally expected. So, it is mandatory to profile the communication errors after administering detailed language, speech and swallowing patterns which would intern direct appropriate intervention plan.

Reference

1. Alexander MP, Fischette MR, Fischer RS. Crossed aphasias can be mirror image or anomalous. Case reports, review and hypothesis. Brain. 1989;112:953–73. [PubMed]
2. A. R. Giovagnoli. Crossed aphasia. Report of a rare case in a glioblastoma patient. The Italian Journal of Neurological Sciences. 1993. Vol. 14, No. 4, 329-332
3. Bakar M, Kirshner HS, Wertz RT. Crossed aphasia. Functional brain imaging with PET or SPECT. Arch Neurol. 1996 Oct;53(10):1026-32.
4. Castro-Caldas A, Confraria A. Age and type of crossed aphasia in dextrals due to stroke. Brain Lang 1984;23:126-33.
5. Demirkiran M, Ozeren A, Sonmezler A, Bozdemir H. Crossed aphasia in multiple sclerosis. MultScler. 2006;12:116–9. [PubMed]
6. Dewarrat GM, Annoni JM, Fornari E, Carota A, Bogousslavsky J, Maeder P. Acute aphasia after right hemisphere stroke. J Neurol. 2009;256:1461–7. [PubMed]
7. GéraldineMaillardDewarrat, Jean-Marie Annoni, EleonoraFornari, Antonio Carota, JulienBogousslavsky and Philippe Maeder. Acute aphasia after right hemisphere stroke. Journal of Neurology. 2009;Vol 256, No. 9, 1461-1467.
8. Gloning I, Gloning K, Haub G, Quatember R. Comparison of verbal behavior in right-handed and non-right-handed patients with anatomically verified lesion of one hemisphere. Cortex 1969;5:43-52.
9. Hecaen H, Mazars G, Ramier AM, Goldblum MC, Merienne L. Aphasiecroisee chez: un sujetdroitierbilingue (Vietnamien-Francais). Revue Neurol(Paris) 1971;124:319-23.
10. Groher. Speech and language disorder associated with traumatic brain injury. In B. E. Murdoch (1st Ed), Acquired speech and language disorders. North America, Paul h. Brooke's publishing co (1983):137-139.
11. Hartman DE, Briggs SJ, Vishwanat B. Dysgraphia after right hemispherestroke. Arch Phys Med Rehabil 1985;66:182-4.
12. Holland. Speech and language disorder associated with traumatic brain injury. In: B.E. Murdoch (1st Ed), Acquired speech and language disorders. North America: Paul H. Brooke's publishing co. (1982):133.
13. Kirsher H S. Handbook of neurological speech and language disorders. New York: Marcel Dekker, 1995.

14. Marien P, Engelborghs S, Vignolo LA, De Deyn PP. The many faces of crossed aphasia in dextrals: report of nine cases and review of the literature. Eur J Neurol. 2001;8:643–58. [PubMed]
15. Martins IP. Crossed aphasia during migraine aura: transcallosal spreading depression? J NeurolNeurosurgPsychiatr. 2007;78:544–5. [PMC free article] [PubMed]
16. Moretti R, Bava A, Torre P, et al. Bilingual aphasia and subcortical-cortical lesions. Percept Mot Skills 2001;92:803–14.
17. Murdoch, B.E. Speech and language disorder associated with traumatic brain injury. In: B.E. Murdoch (1st Ed), Acquired speech and language disorders. North America, Paul H. Brooke's publishing co (1990): 120-41.
18. Rita Sloan Berndt, Charlotte C. Mitchum and Thomas R. Price. Short-term memory and sentence comprehension: an investigation of a patient with crossed aphasia. Brain. A Journal of Neurology: 263-280.
19. Theodoros DG, Murdoch BE, Chenery HJ. Perceptual speech characteristics of dysarthric speakers following severe closed head injury. Brain Inj1994; 8:101-24.
20. Zangwell OL. Speech and the minor hemisphere. ActaNeurolBelg 1967; 67:1013-20.