Volume : 1 | Issue : 5 | May 2012 ISSN - 2250-1991

Research Paper Social Sciences

Aphasia – a loss of linguistic faculty

* Dr Alpesh B Joshi

* Sr Lecturer in English, Atmiya Institute of Technology Science, Rajkot, Gujarat

ABSTRACT

The research paper is titled as "Aphasia – a loss of linguistic faculty". It aims to investigate the learning disorders surfacing through varied neural blockages, lesions and their prevalence only. It also studies the types of aphasia put forward by Broca, Wernik and others impeding the linguistic proficiency in diverse structure of language like words, grammar, concord, substitution, comprehension of words, sentences, phonemes and so on. Since then Neurolinguistics blockages and deficiencies affecting communication and patients' rehabilitation from them is an important branch of medicine, linguistics and language. This in turn attracts and employs many researchers to simplify the complex structures of blockages, thereby suggesting some alternatives that can ease the severe linguistic problems. The exploration and understanding the problems of linguistic loss will facilitate the teachers and parents in dealing with such learners very considerately.

Keywords : Aphasia, phonemic paraphasia, semantic paraphasia, verbal paraphasia, neologism, anomia, circumlocution, echolalia, perseveration, agrammatism, paragrammatism, Broca, Wernicke, conduction

The term aphasia refers to a loss of linguistic faculty as a consequence of a cerebral lesion. (A lesion is any abnormal tissue found on or in an organism, usually damaged by disease or trauma. Lesion is derived from the Latin word 'laesio' which means "injury"). (From http://en.wikipedia.org/wiki/Lesion). There are various types of lesions causing aphasia (cranial trauma, infection, tumor, cerebral infarction, and hemorrhage). Aphasia is characterized by errors in verbal expressions that are known a paraphasias (substitution of one element for another), word-finding difficulties (anomias), and comprehension disorders. The study of language disorders and the patients' rehabilitation from them is an important branch of medicine and employs many researchers (Blanken, Dittmann, Grimm, Marshall, & Wallesch, 1993; Lecours and Lhermitte, 1979; Taylor Sarno, 1981).

I do not propose to get into the medical and clinical aspects of this as it does not fall within the purview of this research but a few technical terms need an explanation before we come to the description of the various types of aphasia.

1. Phonemic paraphasia may result in production of a nonword. This type of error in verbal expression consists in the substitution of one or two phonemes within a word that patient wanted to produce. Nevertheless, listener manages to understand the word that the subject wanted to utter (ie, wesh in place of wish, seep in place of sheep). This type of error depends on the substitution of one or two phonemes within a word that the patient wanted to produce, which results in another real word that is irrelevant to the discourse context. It is usually easy to recognize the target word that the patient wanted to produce (ie, "I am hungry and even dirty", "I am hungry and even thirsty").

2. Semantic paraphasia produces a word irrelevant to the context, and is yet semantically linked to the target word. For instance, the patient says: "I use a spoon and fork to cut steak" instead of "I use a knife and fork to cut steak".

3. Verbal paraphasia consists in the production of a word irrelevant to the discourse context and it is not phonemically similar to or semantically related to the target word (i.e. I have been absent for cat instead of I have been absent for long).

4. A neologism is a nonword that prevents recognition of the word the patient intended to produce. The phonemic sequences of these non-words, however, follow the phonological rules of the language in which the patient is expressing himself. (i.e. I have seen a gat on the sep).

5. Anomia is the incapability of retrieving a word during naming tasks or during spontaneous verbal expressions.

6. Circumlocution. When the patient has difficulties in finding words owing to anomia, he often replaces the word he intended to produce with describing the object to be named or its function. If the patient cannot name the object watch he will say: "It is an object with two hands", or in the case of key "It is used to open the door".

7. Echolalia is the involuntary and uncontrollable tendency on the part of the patient (P) to repeat what the interlocutor (I) has just said, e.g. (I): "What is your name?" (P): "What is your name? My name's John", giving a feeling as if the echoing of the question asked in order to understand/comprehend in order to respond for the purpose of self-satisfaction.

8. Perseveration implies the involuntary repetition of syllable, words, or syntagms (i.e. "I had soup, then I drank soup and lastly I washed soup"). Syntagms are strings of words that are the smallest units of syntax.

9. Agrammatism is generally marked by the tendency to use the simplest infections. A typical production could thus be, for example: "seen cat garden" instead of "I have seen a cat in my garden". Moreover agrammatism is characterized by the incorrect use of affixes, which leads to violations in concordance, for instance between article and noun for number (e.g. a cars), or between subject and verb (Mark eat), etc. This could be understood in context with child language use in the initial stages of language learning.

10. Paragrammatism implies any incorrect use of grammatical morphemes and forms that is not included in agrammatism, specifically, the substitution of grammatical words or errors in the selection of tenses, aspects and persons (i.e. “He says they can go forget the dishes”).

11. Errors in word order. Sometimes all words uttered by the patient are correct but the word order is wrong (e.g. “Bath had we”).

12. Closed class words, also known as “function words”, comprise articles, prepositions, conjunctions, demonstrative and possessive adjectives, and personal and possessive pronouns. Their number within a given language is limited. Aphasic patients with lesions in structures anterior to the Rolandic fissure (Fig. 1) make a large number of errors in this category of words.

13. Open class words, also known as “content words”, comprise nouns, adjectives, verbs and adverbs. They are called open class words because their number can constantly increase. Aphasic patients with a lesion in an area posterior to the Rolandic fissure (Fig. 1) generally present an alteration in the use of this category of words.

Different Types of Aphasia

Many neurologists Adler, A., Aglioti, S., Beltramello, A., Girardi, F., & Fabbro, F. Aitchison, J., Akmajian, A., Demers, R.A., & Harnish, R.M. have become concerned with the classification and description of the different types of aphasia related to brain lesions. One of the most systematic classifications was proposed in 1885 by German neurologist Ludwig Lichtheim, who extended and worked out the language scheme that had been proposed by Carl Wernicke 11 years earlier (Lichtheim, 1885). Lichtheim presupposed the existence of a centre accounting for acoustic images (A) where the acoustic memory for words was located, and a center accounting for motor images (M) where motor memory for coordinated movements for word production was located (Fig. 1). From auditory periphery (a) acoustic impressions reached the auditory cortex (A). However, sound comprehension required another link between the acoustic centre (A) and the concept center (B). In Lichtheim’s opinion, the production of voluntary language started when the center for concepts B sent information to the center accounting for motor images M, which, in turn, sent nerve stimuli to the language areas. Lichtheim’s diagram was not merely a cerebral representation of language, but one that permitted workers to advance hypotheses on the various types of aphasia that might affect a patient.

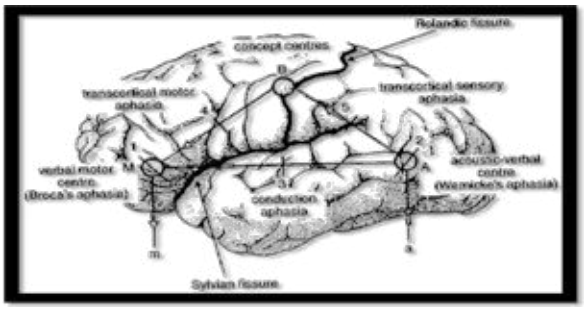

Fig. 1. Lichtheim’s classification of the various aphasic syndromes

On the basis of Lichtheim’s model the following types of aphasia were forecast:

1. Broca’s aphasia as a consequence of a lesion localized in Broca’s area (M)

2. Wernicke’s aphasia as a consequence of a lesion in Wernicke’s area (A)

3. Conduction aphasia as a consequence of a lesion in the connection fibers between Wernicke’s area and Broca’s area (A-M)

4. Transcortical motor aphasia as a consequence of a lesion in the structures between the concept center and Broca’s area (B-M)

5. Transcortical sensory aphasia as a consequence of a lesion in the structures between the concept center and Wernicke’s area (B-A).

This classification of language disorders in a limited number of aphasic syndromes have remained almost unchanged until the present day. During the 1970s, a group of North-American aphasiologists proposed a more updated version (Albert, Goodglass, Helm, Rubens, & Alexander, 1981; Frederiks, 1985). However, this version was similar to Lichtheim’s model, which had been widely applied in clinical settings because it is a useful way of communication between doctors.

A brief review of one of the most accepted and currently most widespread classification of aphasia is offered here for ready reference. It is an updated version of Lichtehim’s classification. Figure 2 schematically shows the extension of the cortical lesions causing the various aphasic syndromes (Maruszewski, 1975; Murdoch, 1990).

1. Broca’s aphasia. Verbal expression is impeded. Spontaneous speech is effortful, poorly articulated, hesitating and scanty; there is a paucity and simplification of grammatical forms with omissions of closed class words (“telegraphic speech”). Patients’ verbal comprehension is good, but they often have difficulty in understanding complex grammatical sentences. Repetition of words or sentences is very limited (Table 1). These patients usually present a lesion circumscribed to Broca’s area localized in the left frontal lobe (Fig. 2). This aphasic syndrome is frequently accompanied by a right-sided paralysis (right sided hemisparesis or hemiplegia). Broca’s aphasia accounts for 20% of all aphasic syndromes that are usually diagnosed.

2. Transcortical motor aphasia. Spontaneous speech is reduced, not fluent, and quite agrammatic. The patient has no difficulty in naming and comprehending (Table 1). The lesion interrupts the pathways between Broca’s area and the other frontal structures (Fig. 2). It is often accompanied by a right-sided paralysis. This form of aphasia is rare (< 5%).

3. Wernicke’s aphasia. Verbal expression is fluent, yet characterized by many paraphasias (phonemic paraphasias and neologisms). Naming is severely impaired, as are verbal comprehension and repetition (Table 1). The lesion causing this aphasic syndrome generally affects Wernicke’s area, which is localized in the left temporal lobe (Fig. 2). This form of aphasia is frequently accompanied by blindness of the right visual field (right homonymous hemianopia) and amounts to almost 20% of all cases.

4. Conduction aphasia. Speech is fluent, with phonemic paraphasias. Acoustic comprehension is good, whereas repetition is severely impaired (table 1). The site of the lesion causing this type of aphasia generally comprises fibers of the arcuate fasciculus, which allow communication between frontal areas of language and temporal areas (Fig. 2). Conduction aphasia is rather rare and accounts for 5% of all cases.

5. Transcortical sensory aphasia. Speech is fluent, with many paraphasias (phonemic, semantic, and verbal paraphasias) and serious deficits in naming (anomia). Acoustic comprehension is impaired, whereas repetition is relatively preserved (Table 1). Lesions causing this form of aphasia are generally diffuse and affect the associated temporo-parieto-occipital areas (Fig. 2). This form

of aphasia has a frequency lower than 5%.

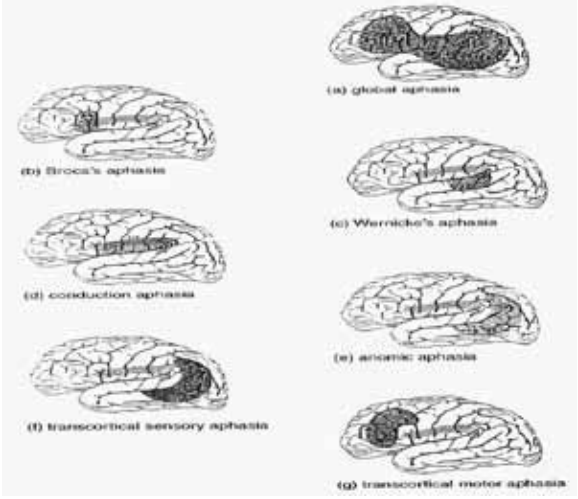

Fig 2. Site of the main lesions causing aphasic syndromes

6. Anomic aphasia. Spontaneous speech is fluent. Comprehension and repetition are generally preserved. Expression is impaired by frequent word finding difficulties (anomia), which is the most serious disorder the patient suffers from (Table 1). The lesion causing this form of aphasia affects the left associated temporo-parieto-occipital areas (Fig. 2). The extension of the lesion is generally limited and lower in severity than that of sensory transcortical aphasia. Anomic aphasia account for about 5%.

7. Global aphasia. This is the most severe clinical form of disturbance. Speech is highly impeded, even nonexistent. Acoustic comprehension is severely damaged (Table 1). The lesion causing this form of aphasia generally affects almost all language areas of the left hemisphere (Fig. 2). Aphasia can be accompanied either by a right-sided paralysis or by a loss of the visual capacity of the right field. Global aphasia accounts for around 20%.

8. Isolation of the speech area syndrome. This is very rare and severe clinical form of disturbance. Spontaneous speech and comprehension are absent; only repetition is preserved (Table 1). This particular syndrome is generally caused by severe carbon monoxide poisoning, which destroys the cortical areas surrounding the cortical structures of language.

Table 1
Main clinical features of aphasic syndromes

Aphasia	Spontaneous Speech	Compre-hension	Repetition
Broca's aphasia	Non fluent	Good	Poor
Transcortical motor aphasia	Non fluent	Good	Good
Wenicke's aphasia	Fluent	Poor	Poor
Transcortical sensory aphasia	Fluent	Poor	Good
Anomic aphasia	Fluent	Preserved	Preserved
Conduction aphasia	Fluent	Good	Poor
Global aphasia	Non fluent	Poor	Poor
Isolation of the speech	Non fluent	Poor	Good

The clinical aphasia classification given above is only one of many alternative approaches. Actually many others have been proposed, including systems typically based on linguistic and cognitive neuropsychological insights (e.g. Lesser, 1978; McCarthy & Warrington, 1990). Apart from these differences, for methodological and therapeutic reasons, neurolinguists dealing with acquired language disorders usually give a detailed description of what patients are able to do and what they cannot do rather than classify them according to a given aphasic syndrome at all costs. The assessment of the patient's residual linguistic abilities, together with the evaluation of the patient's neurological and neuropsychological conditions, allow one to establish when speech therapy should begin and what to assess and, if necessary, to decide a change in the therapeutic programme.

REFERENCES

1. "Lesion" accessed from http://en.wikipedia.org/wiki/lesion | 2. G Blanken, J Dittmann, H Grimm, J C Marshall, & C Wallesch, Lin¬guistic disorders and pathologies. (Berlin, 1993) | 3. M Taylor Sarno, Acquired aphasia, (New York, 1981) | 4. A R Lecours, & F Lhermitte, L'aphasie, (Paris, 1979) | 5. L Lichtheim, Brain, (1885) | 6. M L Albert, H Goodglass, N A Helm, A B Rubens, & M P Alexander, Clinical aspects of dysphasia, (New York, 1981) | 7. M Maruszewski, Language communication and the brain. A neuropsychological study, (Mouton, 1975) | 8. B E Murdoch, Acquired speech and language disorders. A neuroanatomical and func-tional neurological approach, (London, 1990) | 9. R Lesser, Linguistic investigations of aphasia, (London, 1978) | 10. R A McCarthy, & E K Warrington, Cognitive neuropsychology. A clinical introduc¬tion, (Orlando, 1990)