Analysis of Language Forms in Patients with Broca's Aphasia

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Abstract

Background: Aphasia is a language disorder that occurs due to lesions in the part of the brain that regulates language. Broca's aphasia as one of the aphasia syndromes is a type of aphasia that often appears.

Objective: The aim of the research is to determine the form of language in phonology, morphology and syntax in people with Broca's aphasia.

Method: This research used a qualitative case study type method, where the researcher conducted an in-depth exploration of a language sample of 10 people with Broca's aphasia. The research used the Aphasia Test for Diagnostic Information and Rehabilitation (TADIR) instrument.

Results: Broca's aphasia sufferers show a marked decline in their language forms, in the form of disturbances in phonology (phonemics), morphology and syntax.

Conclusion: Broca's aphasia is a non-fluent aphasia, there are problems in communicating due to deficits in the form of language, in the form of problems with phonology, morphology and syntax. Oral output is mildly to severely impaired

Key words: Broca's aphasia, language forms, speech therapist, non-fluent aphasia

INTRODUCTION

Humans need tools to communicate with other people, the communication tools are in the form of symbols that have been agreed upon by a group of people or certain social groups. The symbols used can be in the form of codes, signals, certain codes, diagrams, pictures, or in the form of sounds, or sounds from human speech organs. This sound is further referred to as the sound of language (fone). In its development, the sounds of language become differentiators of meaning (phonemes), which are arranged in the form of words and sentences. The series of words in this sentence are able to represent human ideas, thoughts and feelings. This communication tool is then referred to as language. Language is a communication tool used in daily activities, language can be conveyed orally or in writing. Language becomes a means of communication. When someone is unable to convey ideas, thoughts, or feelings in the form of language and/or does not understand what other people are conveying, it means that person has a language disorder, causing communication difficulties. If there is a language disorder, the communication does not go as expected, what you want to convey does not match what the speaker has in mind or what is received does not match what the other person is saying. This language disorder is known as aphasia.

Aphasia according to Rosenberg on the Web (2017: 234), "aphasia is an impairment, due to acquired and recent damage of the central nervous system, of the ability to comprehend and formulate language, it is multimodality disorder represented by a variety of impairments in auditory comprehension, reading, oral-expressive language, and writing", that aphasia is an acquired disability and recent damage to the central nervous system, in the ability to understand and formulate language, multimodal difficulties that appear to vary in comprehension, reading, speaking, and writing. The difficulty of aphasic sufferers who are multimodal, so that not only one aspect of language is affected, they can be affected dominantly in understanding (receptive) only, or affected in their expressions (expressive), but can be affected by both, both receptive and expressive. Comprehension and/or expression also has two output channels, namely orally and in writing, so it is very possible to be

exposed to reading or writing as well. The number of these distractions hampers communication broadly, but that doesn't mean there aren't any modalities left, so examining the aspects will unravel an understanding of what modalities are left so that they can be developed. Many aspects of language are affected, leading to the emergence of a dichotomy in the classification of aphasia by experts, to simplify the extent of the disorder that occurs. Webb added, "Widely used dichotomy for spontaneous language in aphasia is fluen versus nonfluent. All person with aphasia show some degree of expressive involment in conversational language can be appropriately describe as fluent or nonfluent", bahwa dikotomi bahasa spontan pada klasifikasi afasia adalah lancar dan tidak lancar.

All aphasic sufferers show some degree of involvement in the language used in conversation which can be accurately described as fluent or not fluent. Fluent or not fluent in the speech of sufferers of aphasia is measured by the average number of words per minute during questions and answers or telling stories. Speech fluency is also seen in grammatical terms, where problems occur in morphology and syntax. In line with the opinion of Blumstein (2022. 65) about how the grammatical elements of the patient are, "those with Broca's aphasia make consistently more syntactic errors than those with Wernicke's aphasia", bahwa penderita afasia Broca consistently has more syntactic errors than those with Wernicke's aphasia. The division regarding the classification of aphasia syndrome according to several experts in Cahana-Amitay and Albert (2015. 13) "this view of brain-language relations has resulted in the creation of a clinical classification of aphasic syndromes, which, to some extent, still guides aphasia research and clinical practice. This classification comprises seven major aphasic syndromes with distinct behavioral and brain damage patterns" (e.g., Helm- Estabrooks, Albert, & Nicholas, 2013; Saffran, 2000); clinical classification of aphasia syndrome based on the relationship with the language area of the brain, the type and characteristics are divided into non-fluent and fluent. Non-fluent aphasia consists of Broca's aphasia, motor transcortical, isolation aphasia, and global aphasia, while smooth aphasia includes Wernicke's aphasia, conduction, sensory transcortical, and anomis (Shipley, 2016. 460).

In connection with the problem of language aspects that are disturbed in aphasia, a lot of language symptoms appear. Bloom and Lahey in Kaderavek (2015.5) divide the language area into: "Form, content and use. Language form includes phonology, morphology and sintax (i.e., structure of language). Language content consists of semantics (i.e., meaning of language); language function consists of pragmatics (i.e.,how language is uses within social contexts). The division of the language area according to Bloom and Lahey, is divided into aspects of form, content and use. The understanding that can be taken, that language has a form that includes phonology, morphology, and syntax. Language content is a semantic element, or it is also called language understanding; language functions consist of pragmatic elements or how language is used in context. Patients with aphasia who have phonological disorders, the symptoms that appear are literal paraphasia, in which phonemic disturbances occur in the form of phoneme substitutions; morphological disorders can occur difficulties in the morphemization process where sufferers have difficulty in the forms of words that experience affixation; as well as syntactic disturbances occur in agramatism, namely the simplification of sentence forms (Dharmaperwira-Prins. 2002. 60-61). The characteristics of Broca's aphasia as non-fluent aphasia significantly affect language forms, Gillam (2011. 277) argues, "Broca's aphasia is characterized by nonfluent, effortful speech and agrammatism. Oral expression is slow with very short sentences (3-4 words in length) that contain mostly content words (nouns and verbs)." Definition of Broca's aphasia, characterized by disfluency, more effort to speak and agramatism. Slow spoken expression with very short sentences (3-4 words long) containing mostly content words (nouns and verbs). So agramatism itself is a violation of the rules of morpho-syntax, in a light or serious way. Clinically the sufferer's speech is disturbed, from being unable to utter words at all, having difficulty finding words and requiring extra effort to be able to pronounce words to sentences. Language comprehension functions may be normal or slightly impaired, repetition may be impaired, naming may be impaired and writing may be slightly impaired or normal (Pukovisa. 2014. 19). Papathanasiou supported by stating, "Nevertheless, thorough examination reveals specific comprehension deficits regarding complex syntactic structures. Repetition of words or sentences,

reading aloud, naming, and writing are also affected. Phonemic paraphasias are occasionally observed", no less through examination increasingly gives an understanding of the existence of complex syntactic structure deficits. Imitation of words or sentences, reading aloud, naming, and writing are also affected. Phonemic paraphasia is usually seen on observation.

By understanding the three language areas above, it will provide many views on how aphasia affects language in terms of form, content, and the use of the sufferer's language. If discussing the sub-sections on aphasia is not fluent, in people with aphasia who have mild or severe disturbances, the form of language must be disturbed. If the form of language is disturbed, it will affect the content of the message to be conveyed through speech, in the end the use of language is not in accordance with the context. Of the several aphasia syndromes, Broca's aphasia is the most common after global aphasia, although there are not many studies, based on the Afasia Study at three hospitals in Copenhagen in Pukovisa et al (2014.7) Broca 12%, after global 32%. However, in a study by Purnomo et al (2016) found 25 cases of Broca's aphasia (41.6%), 10 cases of global aphasia (16.6%) of 60 aphasia patients.

METHOD

The research used a case study qualitative method (Sugiyono. 2017. 15), in which the researcher explored the form of language on 10 respondents who were diagnosed with Broca's aphasia. The study used the es Afasia untuk Diagnosa, Informasi Rehabilitasi (TADIR). instrument.

RESULT

1. Descriptive Analysis

   Based on the results of the descriptive analysis, it is known that the sample in this study consisted of 70% male and 30% female. Then, 100% of the samples had right-handed lateralization. Furthermore, 80% had literal paraphasia and 100% had anomia on the name and name test (Tables 1–Table 4).

   The research was conducted using the Aphasia Test for Diagnosis, Rehabilitation Information, in which the test assessed the respondent's ability to form language in terms of phonology and

morphosyntax. At the beginning of the session, questions and answers and storytelling were carried out to assess fluency or not fluency by counting the total number of words per minute. When it comes to personal information, naming, naming and imitating, scoring is rated from impossible to normal within a score range of 1-5.

Table 1. Respondent criteria

Respondent	Age	Sex	Broca Aphasia
1	70	M	Yes
2	64	M	Yes
3	53	F	Yes
4	57	M	Yes
5	65	F	Yes
6	34	M	Yes
7	63	M	Yes
8	47	M	Yes
9	58	F	Yes
10	50	M	Yes

Tabel 2. Jenis Kelamin

Jenis Kelaimin	Frequency	Percent	Valid Percent	Cumulative Percent
Laki-laki	7	70.000	70.000	70.000
Perempuan	3	30.000	30.000	100.000
Missing	0	0.000		
Total	10	100.000		

Table 3. Hand Lateralization

Lateralisasi Tangan	Frequency	Percent	Valid Percent	Cumulative Percent
Kanan	10	100.000	100.000	100.000
Missing	0	0.000		
Total	10	100.000		

Table 4. Literal Paraphasia

Parafasia literal	Frequency	Percent	Valid Percent	Cumulative Percent
Ada	8	80.000	80.000	80.000
Parafasia literal	Frequency	Percent	Valid Percent	Cumulative Percent
Tidak ada	2	20.000	20.000	100.000
Missing	0	0.000		
Total	10	100.000		

Table 5. Anomia

Anomia	Frequency	Percent	Valid Percent	Cumulative Percent
Ada	10	100.000	100.000	100.000
Missing	0	0.000		
Total	10	100.000		

Table 6. Test results with TADIR

Respondent	Fluency	Auditory comprehension	Speaking Personal information	Semantic fluency	Naming		Phonological Disorder
1	54	4	3	4	3	3	Ada
2	31	3	3	2	2	2	Ada
3	31	4	4	3	3	3	Ada
4	40	4	2	2	2	3	Ada
5	58	3	5	3	3	3	Tidak ada
6	21	3	3	3	3	3	Ada
7	49	3	4	3	3	2	Ada
8	29	2	1	1	1	1	Tidak ada
9	4	2	1	1	2	3	Ada
10	39	2	1	2	1	2	Ada
Mean	35,6	3	2,7	2,4	2,3	2,5	

DISCUSSION

Male patients with Broca's aphasia have a percentage of 70%, the number is greater than female sufferers, which amount to 30%. The age range of Broca's aphasia sufferers is between 34-70 years, with an average age of 56.1 years. The average total number of words per minute is 35.6 words per minute, so it is valid including non-fluent aphasia. Auditive understanding of language has a score range of 2 to 4 with an average score of 3 or impaired. This indicates that although theoretically sufferers of Broca's aphasia have lesions in the motor area of language, they also have problems with auditory or sensory understanding of language. This requires proof with further research through brain imaging techniques in people with Broca's aphasia.

Sufferers' scores when talking about personal information have a score range of 1 to 5, with an average score of 2.7, this range proves that when asking and answering personal information about Broca's aphasia sufferers from impossible to normal. Spontaneous talk is carried out with questions and answers between the tester and the patient, requiring an immediate response between questions and answers. These spontaneous questions and answers are automatic, so they are also called automatic language. Automatic language is smoother in output, because planning is not as difficult as requiring execution (praxis) which is as difficult as mentioning, naming and imitating. Patients without dyspraxia should respond better. Unfortunately the data in this study did not target the motor praxis aspect, so that Broca's aphasia can be correlated with dyspraxia or apraxia. Do people with Broca's aphasia who have worse spontaneous speech have widespread lesions that affect automatic language? This also requires further research. The scores say the range is 1 to 4, with an average score of 2.4. Calling on Broca's aphasia sufferers gets results ranging from impossible to mildly distracting, so that the form of language can be analyzed at the word level most likely to be disturbed. The problem that arises is anomia, where the sufferer has difficulty finding the word in question. The word in question has already appeared in his mind, the response to pointing or the description sometimes appears, but the word cannot be uttered, so it is called word production anomia..

The naming scores range from 1 to 3, with an average score of 2.3. This indicates a morphosyntactic disorder, in which expressive language difficulties arise from the level of words to sentences. When naming word levels it indicates anomaly in word production, so when it is difficult to name sentence levels it indicates difficulties at a more complex grammatical level. Sentence complexity experiences shortening or simplification into nouns or verbs only. While most conjunctions do not exist. The sentence response in the form of grammatical simplification is called agramatism. A heavier form of agramatism is telegram speech. Mimic scores range from 1 to 3, with an average score of 2.5. This shows that people with Broca's aphasia have difficulty imitating. When it is difficult to imitate words that have morphemic changes, the form of changes from basic

morphemes in the form of basic words with affixation processes (prefixes, infixes and suffixes) experiences difficulties, then the patient is considered to have morphological problems. If related to syntax, then this disorder is called a morphosyntactic disorder. As many as 8 out of 10 sufferers or 80% have phonological disorders. The disturbance appears in the form of a change in the phoneme of the word in question, this symptom is called literal paraphasia. Literal paraphasia occurs spontaneously as a result of impaired processing of speech sounds at the perceptual level. Correlated with the patient's auditory ability, but not on the level of sensation. Phoneme changes usually occur in a group of phonemes or a slight shift in the sound features of the language. In general, phoneme substitution is not phonetically problematic, unless the patient has neuromuscular problems as well. It is also necessary to further examine the correlation between Broca's aphasia and neuromuscular problems. Of the 10 respondents, there were two who did not have phonological disorders, namely sufferers who did not have speech disorders regarding personal information, and patients with speech disorders regarding impossible personal information. Whether literal paraphasic problems correlate with automatic speech requires further research.

CONCLUTION

Broca's aphasia sufferers show a significant reduction in the form of their language, in the form of disturbances in phonology (phonemic), morphology, and syntax. Elements in phonology and morphosyntax, as well as their correlations require further in-depth study.

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