P 3-99

The Recovery of Aphasia in Chronic Stroke Patients

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Objective
The Purpose of this study was to investigate the characteristics of recovery pattern of aphasia in chronic stage of stroke with dominant hemisphere lesion.

Method
Among the patients who were admitted to our hospital from January 2011 to December 2017 and treated for acute cerebrovascular accidents, a total of 95 patients completed language evaluation using Korean version of the Western Aphasia Battery (K-WAB) at least twice. Only those with their initial evaluation done within three months after the onset and another one at least one year after the onset were left. After exclusion of the patients with non-dominant hemisphere lesion, recurrent attack, or any other functional or structural brain disorders, only twenty three patients were included in the study. Their brain imaging studies and Results of neurological tests were also used to evaluate their correlation with recovery pattern of aphasia and linguistic change.

Results
A total of 23 patients were included in the analysis. Among the twenty three were nine males (39.1%) and fourteen females (60.9%), with the mean age of 56.5±13.0 years old at the time of their first language evaluation. Eleven (47.8%) of them suffered from ischemic stroke, another eleven (47.8%) from hemorrhagic stroke, and one (4.4%) from both. The incidence of strokes involving cortical lesions was 82.6% (nineteen patients) including ten of those whose main lesions were limited to cortex and nine with both cortical and subcortical lesions. The mean values of post-onset duration before initial and follow-up language evaluation were 34.1±19.5 days and 715±251 days, respectively. (Table 1) The follow-up language evaluation showed statistically significant improvement of the Aphasia Quotient (AQ) and the scores in four subtests of K-WAB, including fluency, comprehension, repetition, and naming. (Table 2, Figure 1) Among the 23 patients, six were classified into fluent aphasia (fluency score of at least 10; 20 in maximum) on their initial evaluation, and seventeen into non-fluent aphasia. The AQ improved from 62.38±29.30 to 71.56±23.73 (P=0.118) in patients with fluent aphasia, and from 14.09±23.66 to 41.20±27.81 (P<0.001) in those with non-fluent aphasia.

Conclusion
Aphasia in patients with dominant hemisphere stroke lesion showed significant recovery in all four areas of K-WAB, including fluency, comprehension, repetition and naming, by the time of one year after the onset. By the mean time of 715 days after the stroke onset, the AQ improved from 23.33±30.05 to 47.5±29.54 (P<0.001). There was no significant

improvement in AQ in the fluent aphasia group (P=0.118), but in the non-fluent aphasia group (P<0.001).

Table 1. General characteristics of the patients (N=23)

	Total N=23	(Percent)
Mean age (years)	56.5±13.0 years	
Sex ratio (M:F)	9:14 (1:1.56)	(39.1%:60.9%)
Post-onset duration before initial evaluation	34.1±19.5 days	
Post-onset duration before follow-up evaluation	715±251 days	
Infarct or Hemorrhagic		
Infarct	11	(47.8%)
Hemorrhagic	11	(47.8%)
Both (including hemorrhagic transformation)	1	(4.4%)
Lesion: Cortical or Subcortical		
Subcortical	4	(17.4%)
Cortical	10	(43.5%)
Both	9	(39.1%)

Table 2. Results of language evaluations (K-WAB)

	Initial	Follow-up	P-value
Aphasia quotient	23.33±30.05	47.5±29.54	<0.001
Fluency	4.54±6.08	10.04±6.12	<0.001
Comprehension	59.91±62.81	106.13 ±64.09	<0.001
Repetition	18.87±32.72	46.52±37.79	<0.001
Naming	15.26±28.48	45. 00 ± 35.4	<0.001

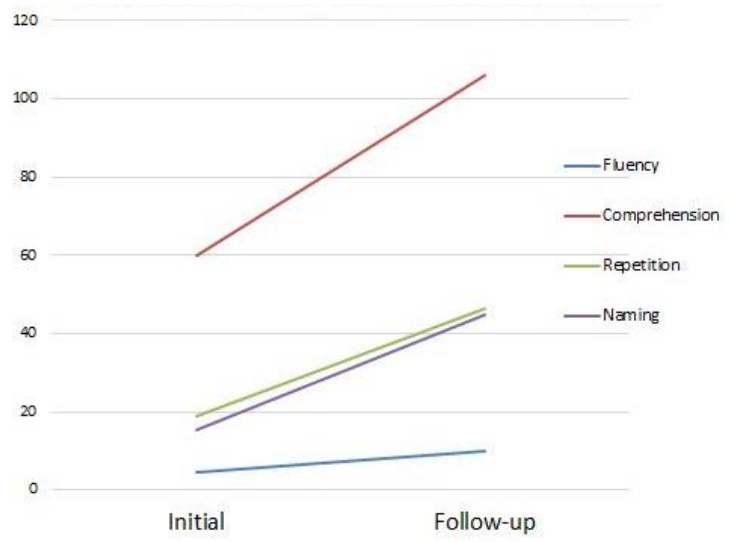

fig 1. Results of language evaluations(K-WAB)