질의응답 일시 및 장소 : 10 월 19 일(토) 11:00-11:30 Room G(3F)

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Quantitative linguistic feedback for pediatric patients: the more you talk, the better they speak.

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Pediatric patients with brain lesions frequently demonstrate difficulties in communication as a result of impaired language skills. Parent behaviors are believed to facilitate child language development, including encouraging participation, focused stimulation and increasing parent-child interactions. The Language Environment Analysis (LENA) system is able to evaluate natural language environments of children in quantitative manner. In this study, we evaluate the efficacy of a LENA system to promote language skill of pediatric patients. Fourteen patients who had some abnormal findings in brain MRI, and their caregivers involved in the study. Exclusion criteria were a history of hearing impairment, neurological damage, a mother tongue other than Korean, or receiving other speech therapy while attending the program. The LENA system`s hardware includes a digital language device that can audio record for up to 16 hours. Once the recording is complete it is uploaded to the LENA software, which automatically segments the recordings into several categories, and then estimates: adult word count (AWC), child vocalization count (CVC), and conversational turn count (CTC). Our program was consisted of initial and final evaluation of language development (SELSI or PRES), eight education sessions conducted by an experienced speech therapist. Each session for teaching effective communication skills for parents and LENA linguistic feedback time was 50 minutes long and took place once a week. At the LENA linguistic feedback time, the reports that provided to parents included raw numbers, percentiles, and graphic representation of AWC, CVC, and CTC. We examined the correlations between average raw number for three variables of LENA system and developmental quotient (DQ) scores of the language development assessment. Demographic characteristics of the fourteen patients were shown in Table 1. The average AWC of 14 patients was 15,232.8 with a standard deviation of 1,317.14 (range = 5,517-35,139). The average CVC was 1,272.0, with a standard deviation of 202.46 (range = 318-4,413). The average CTC was 410.5, with a standard deviation of 53.9 (range = 297-1,356). After the LENA program, all the patient`s both receptive and expressive language developments were improved: receptive language DQ 1.2 (SD = 0.66, range = 0.3-2.3), expressive language DQ 0.7 (SD = 0.72, range = 0-2.7). There was a significant positive correlation between receptive

language DQ score and average number of AWC, CTC and borderline positive correlation between expressive language DQ score and average number of CVC (Table 2). This study provides valuable evidence for the favorable effect of LENA system in language skill improvement for children with brain lesions, suggesting a positive correlation between CVC, CTC and DQ scores. Follow-study is needed to determine whether LENA program has a substantial effect compared with speech therapy.

Table 1. Demographic data

Sex	Male	Female	Total
	8	6	14
	Mean	SD	Range
Gestational Age (weeks)	29.5	4.27	24-36
Birth weight (gram)	1,242.5	811.98	560-2,950
Age at begin (months)	22.1	5.85	14-30
Language development at begin			
Receptive (months)	11.4	6.00	4-23
Expressive (months)	9.3	2.87	3-14

Table 2. Correlation between variables of LENA system and language DQ scores

Pearson`s r (p-value)	Average AWC	Average CTC	Average CVC	Receptive DQ	Expressive DQ
Average AWC	1				
Average CTC	0.534 (0.05)	1			
Average CVC	0.152 (0.603)	0.859 (<0.01)	1		
Receptive DQ	0.617 (0.02)	0.669 (0.01)	0.363 (0.202)	1	
Expressive DQ	0.04 (0.90)	0.422 (0.13)	0.468 (0.09)	0.366 (0.20)	1