

# Changes of Clinical Features of a Infant who Ended in Specific Expressive Language Disorder

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A left-handed boy with developmental expressive language disorder was observed from the age of 4 months old to 9 years old. The chief complaint was motor delay and mild hypotonia at first. Transient mild right hemiplegia was observed from the age of six months to the age of three years. His clinical features gradually changed from those of motor delay to severe mental retardation with hyperactivity, and then to specific expressive language disorder. Neuropsychological tests which were repeated from five to nine years of age showed almost normal ability of visual cognition and memory, in contrast to the significantly low performances of auditory cognition and memory. EEG findings indicated a left hemispheric lesion. This case showed the need for a detailed observation of a left hemispheric dysfunction in the clinics for the children with speech delay.

## Introduction

Speech delay of toddlers is one of the most common complaints in the child health practice<sup>1</sup>. The most frequent causes of them are mental retardation and transient idiopathic speech delay. Congenital specific language disorders (DSM-III-revised) are relatively rare disabilities<sup>2,3</sup>. However, the early identification of them is very important to do effective speech therapy in early childhood which is thought to be the critical period of language development<sup>4</sup>.

In this paper, we reported the study of a boy with developmental expressive language disorder who was referred for motor delay at the early infancy. His motor and mental development was followed carefully because he showed left hemispheric dysfunctions such as transient mild right hemiplegia and left-sided abnormal EEG findings. The change of his clinical features gave information regarding how to follow the high risk infants' development.

## Case History

T.M., a 4-month-old boy, was referred for further assessment because of his poor head control. There was no remarkable findings in family history and past history, except that he was born as an intrauterine growth retarded infant of unknown etiology, with a birth weight of 2430 g at the gestational age of 39 w 5 d.

He had a high arched palate and bilateral inguinal herniation. Neurological examination revealed generalized mild hypotonia. Laboratory data of serum biochemical findings, blood pH, creatinin phosphokinase, thyroid function, chromosome, and brain CT showed no remarkable findings. He had a current diagnosis of congenital benign hypotonia.

### *Motor and mental development:*

He received physical therapy after the first visit. His hypotonia was gradually decreased. He started to walk alone at the age of 25 months.

He showed voluntary hand prehension to an object after the age of seven month old, and was found to have mild but significant right hemiplegia. His motor laterality became unremarkable until the age of 4 years, but he grew up to be left-handed.

Figure 1 shows his motor and mental development until the age of four years which is summarized in Enjoji developmental profile<sup>5</sup>. At first he showed severe mental-motor delay, then his clinical features changed to those of severe mental retardation with hyperactivity. Until the age of four years, he showed catching-up in the fields of motor and non-verbal communication, however, severe delay of language expression continued. He could not speak even a word until the age of 5 years.

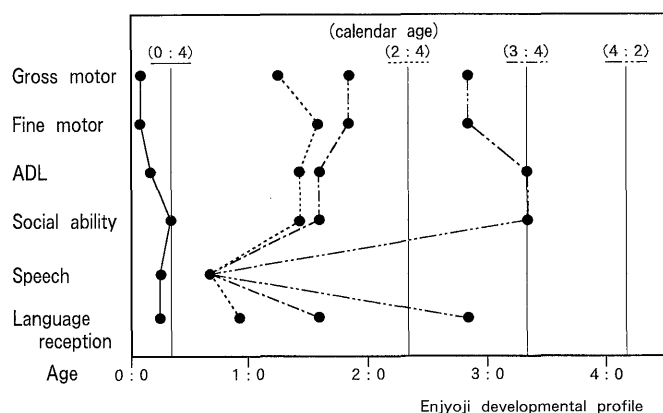


Fig. 1 Mental-motor development : 0-5y.

Neurological soft signs (Table 1):

His neurological soft signs were observed through Minor Neurological Sign Test (MNS) which was standardized by an author (Kawasaki) on the data of more than five hundred healthy and disabled children<sup>67</sup>. He showed abnormalities in equilibrium function and motor coordination. Those findings continued until the final examination.

Indices of mental development (Table 2):

His cognitive characteristics were estimated by Wechsler Pre-school and Primary Scale (WPPSI) and Wechsler Intelligence Scale for Children Revised (WISC-R). Total IQ scores were those of severe mental retardation at the age of five years, and then improved to the borderline range. There was a remarkable gap between performance (visual) IQ and verbal IQ, with much better scores of performance IQ.

Neuropsychological findings:

Neuropsychological findings were evaluated in the MNS and Illinois Test of Psycholinguistic Abilities (ITPA) tests<sup>8</sup> from the age of five to eight years. Those are shown as the developmental age of each item in figure 2. They showed severe and continuous disturbance of the auditory system, in contrast to good performance of the visual system. Short term memory of auditory sequence was also remarkably disturbed in contrast to the good performance of visual short memory. In addition to those, severely low performance of tactile perception, body schema and oral/body praxis were observed. Finally, he was made the clinical diagnosis of specific expressive language disorder.

Neurophysiological and neuroradiological examination:

His auditory function estimated by ABR and Conditioned Orienting Response was good. EEGs at two, three and five years of age repeatedly showed a high

Table 1 Neurological soft signs

Item	Age			
	4:7	5:8	6:8	9:9
visual pursuit	×	×	×	×
stand on one foot	×	×	×	×
diadochokinesis	×	×	×	×
postural tone	×	×	△	△
knee jerk	×	×	△	×
plantar response	×	×	△	△
tandem gait	×	×	×	×

× : <10 percentile △ : 10-50 percentile

Table 2 Intelligence test score

calendar age (neasurement)	5:6 (WPPSI)	7:7 (WISC-R)
Total IQ	<45	65
Performance IQ	75	80
Verbal IQ	<45	63

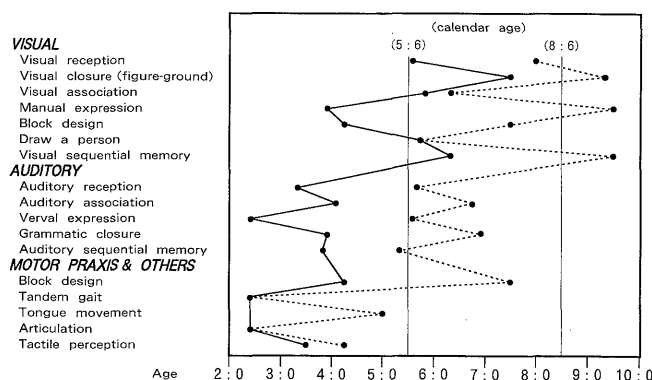


Fig. 2 Neuropsychological Profile

potential focus with sharp waves and high voltage slow waves in the left temporal and occipital areas (Fig.3). There were no clinical seizures, and EEG findings at the age of seven showed no abnormality. The MRI showed no definite abnormality.

Speech therapy and final communicative ability:

This boy received the individualized speech therapy by an author (Siromaru) from three years of age. It was focused at first on the facilitation of the auditory communication using good visual ability. In later years, it focused on compensating his poor oral speech with the visual performance which included talking aid and reading/writing

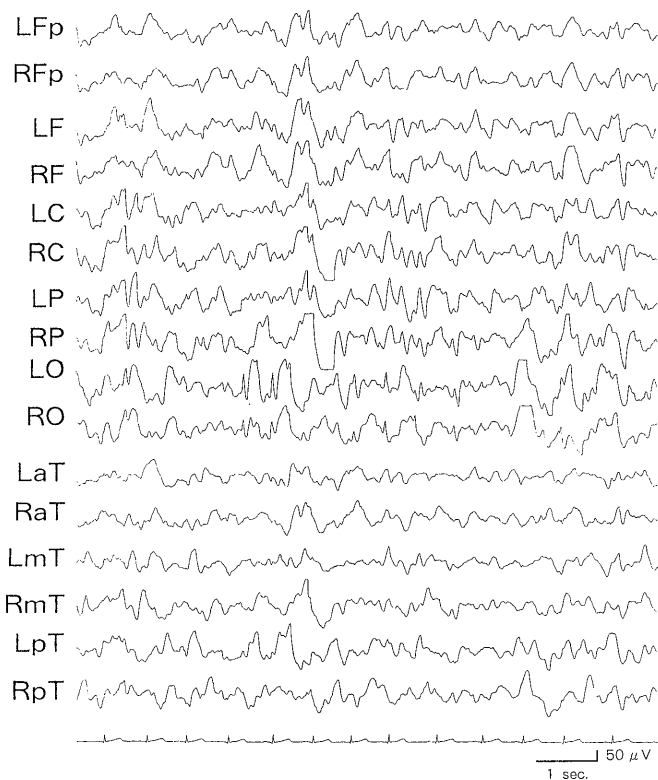


Fig. 3 EEG at three years of age

training.

The final visit at the age of eight years old was in the normal class of his primary school. He was not able to speak long sentences fluently yet, but he could read and understand the sentences which were expected of children of his age. He did rather well in communicating with his friends by using language and written letters.

## Discussion

The early identification of developmental expressive language disorders is difficult. Young children seldom cooperate with the examiners performing neuropsychological evaluation. Also, there are rarely specific objective neurophysiological and neuroradiological findings in ordinary tests such as EEG and CT scans<sup>9,10</sup>.

The etiology of this case was not identified, however, his intrauterine growth retardation suggests that some factor during tatal period caused the dysfunction of the central nervous system. The lateralities of clinical and neurophysiological findings also indicated a left hemispheric lesion. Those signs were unclear until he reached preschool age. His left-handedness was no longer different from those of healthy left-handers after pre-school age. Many population studies did not illustrate a significant

correlation between the handedness and minor neurological abnormalities". This case, however, suggests that the extreme handedness of a child with developmental language disorders can be regarded as a laterality sign.

It seems quite probable that his early clinical signs of lateralities were missed, and he was made the diagnosis of non-specific severe mental retardation in the ordinary public developmental check-up system. If he was labeled as a non-specific mental retardation during his preschool period, he might have not received the special speech therapy.

Fortunately, this boy actually received the individualized speech therapy which started at three years of age. It focused on facilitating his auditory system and then compensating his poor oral speech with visual ability. These techniques seemed to be very effective in increasing his ability and motivation for communication. Finally he achieved relatively good communicative ability. This case illustrates that the longitudinal follow-up in a specialized developmental clinic was useful to detect the etiology of a specific language disorders, and prepare an effective therapy.

Most of the patients with language disorders are discovered at the age of three years through the national health screening. Children's public health care program has recently focused more on children's mental development. However, the training of the primary clinicians who perform the health care program is not sufficient yet<sup>12,13</sup>. This case indicates that the developmental training for primary clinicians should be more promoted.

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