



Case Studies from the Child Development Center

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of speech

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JZ, a 3-year-old boy, was not yet saying any words. His parents reported that he could use several signs they taught him. He said "mama" indiscriminately and often vocalized while pointing things out to his parents. He clearly was frustrated when his parents did not understand what he was trying to say.

JZ recognized letters of the alphabet and selectively pointed them out for others to pronounce for him. His parents and the teachers at his day care program noted that he seemed to understand a lot of what was said around him. He could follow single-step commands and look for named objects that were located in a different room of the house. He tried to interact with other children, and they enjoyed being with him. He had no difficulty adapting to new settings. He was helpful around the house and wanted his parents to be involved in his activities. He pretended he was flying his toy airplane, and he enjoyed playing with action figures.

The mother's pregnancy was unremarkable, and he had experienced no significant medical problems. In the first few months of life, JZ had difficulty nursing, and his weight gain was poor despite switching to a bottle. He smiled at age 1-2 months, sat up at 5 months and walked independently at 9 months. His mother recalled that he waved "bye-bye" at 9 months. He was very quiet as an infant and did not start to babble until he was almost 2 years old. Formal hearing testing was done during infancy and results were normal. A review of the family history revealed that his mother received speech therapy as a child for articulation errors. She also had symptoms of dyslexia. No other family members had difficulty with speech, language, learning or general development as children.

Physical examination was normal, with the exception of generalized hypotonia and increased range of motion of the joints. Oral motor functions were intact. Cognitive assessment, using the Merrill-Palmer Revised Scales of Development (a non-verbal measure), found JZ to function in the borderline range. His standard score was 74. On the Preschool Language Scale, his receptive and expressive language skills were mildly to moderately delayed. His auditory comprehension standard score was 57 and expressive communication standard score was 50.

The speech pathologist noted that JZ had a limited expressive vocabulary and experienced significant difficulty with verbal imitation tasks. His range of speech sounds was severely restricted, and he rarely used combinations of consonants and vowels. No true words were heard during the evaluation session. Despite his verbal difficulties, therapists observed that JZ asked all adults to sign the name of objects with him.

The evaluation team suspected that JZ had apraxia of speech, an oral-motor coordination disorder. Concerns also were raised about his overall cognitive and language development. In addition, the team recommended that JZ begin individual speech therapy services.

One year later, at nearly 5-years-old, JZ returned for reassessment. His parents reported that he had learned to say parts of words, such as "e-e-e" for cookie. He used more than 30 signs, singly and in combination, and he said "yes" and "no" clearly. He could say most of the letters of the alphabet and spell his name out loud. According to his parents, as JZ's ability to orally communicate increased, his frustration decreased. Cognitive testing using the Preschool Performance Scale now found his nonverbal cognitive abilities to be in the solid average range (IQ 98). His expressive language skills were below a 3-year-old level, however his receptive language skills were at a nearly 5-year-old level.

Summary

A diagnosis of apraxia of speech should be considered for children who have severely impaired speech development. However, it may be very difficult to establish a definitive diagnosis until the child has developed some functional speech patterns. In very young children, repeated communication failure may result in avoidance of communicative interactions, making assessment difficult. As noted in this case report, JZ initially appeared to have generalized developmental and language delays. However, with time and appropriate intervention, he was able to demonstrate his normal cognitive and receptive language abilities during a second evaluation.

Diagnosing apraxia of speech, *continued*

The hallmark of apraxia of speech is inconsistency. On occasion, the child may say a word clearly but cannot repeat it on command. Although this disorder appears to represent a non-progressive, severe neuromotor coordination disorder, no specific abnormalities have been found on brain imaging studies. Examination reveals full range of motion in all articulatory structures, normal strength and the ability to make sounds in isolation. As infants, these children often first manifest their problem with oral-motor feeding problems. Parents often recall their child to have been very quiet, with limited babbling. Affected children's efforts to imitate sounds appear labored and ineffective, and they typically resort to physical means for communication. Short, simple words may be pronounced clearly, but intelligibility breaks down as the length and complexity of speech utterances increase.

Apraxia of speech is more common in boys than girls, and family history of affected children often reveals other close relatives with speech and language disorders. The prevalence of apraxia of speech has been estimated at between one and 10 per 10,000. No specific gene markers have been identified for this disorder.

The prognosis seems less favorable for apraxia of speech than for other articulation disorders, however, many children respond well to intensive, individual speech therapy. It is not uncommon for children with apraxia of speech to continue to have speech difficulty into their adult years.

Case Studies from the Child Development Center is a limited edition newsletter to help inform referring physicians and other professionals on the depth and breadth of pediatric communication and behavioral issues diagnosed and treated in the Child Development Center at Children's Hospital of Wisconsin.

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Questions and suggestions can be forwarded to:

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