

Language Delay in Children

Çocuklarda Gecikmiş Konuşma

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ABSTRACT

Concerns about language development are among the most common complaints that parents seek medical advice regarding their children's development. Developmental language disorder refers to a delay in children's receptive or expressive language development without an underlying medical condition. Risk factors such as prematurity, low socioeconomic status, screen exposure, maternal depression and family history can affect language development in children. In a child presenting with a complaint of delay in language development, a detailed anamnesis should be taken, including developmental history, home environment, family history and psychosocial risk factors.

The evaluation of a child should include not only language development but also all areas of development (language, cognitive, motor, relationship, social-emotional) using a standardized developmental assessment tool. A detailed physical examination should be performed to check for accompanying genetic, neurological and other medical conditions (e.g. cleft palate). Regardless of the result of newborn hearing screening, all children should undergo hearing tests, and if necessary, hemogram and iron parameters should be evaluated. If there is a history of regression, delay in the relationship area, or signs of accompanying neurodevelopmental problems, further evaluation should be performed. It should not be forgotten that a delay in language development may be the initial sign of problems such as cognitive delay, autism spectrum disorder, hearing loss, and speech pronunciation disorder.

Early intervention should be planned for children with delayed language development and should not be waited for. Monitoring and supporting each child's development with family-centered methods is the most effective method for the prevention, early diagnosis, and early intervention of all developmental difficulties, including delay in language development.

Key Words: Language delay, Speech, Early childhood development

ÖZ

Dil gelişimi ile ilgili kaygılar ailelerin çocuklarının gelişimleri ile ilgili hekim başvurusunda buldukları en sık yakınmalardan biridir. Gelişimsel dil bozukluğu altında yatan tıbbi bir neden olmadan alıcı ya da ifade edici dil gelişimindeki gecikmeyi ifade eder. Prematürite, düşük sosyoekonomik düzey, ekran maruziyeti, anne depresyonu, aile öyküsü gibi risk etmenleri çocuklarda dil gelişimini etkileyebilmektedir. Dil gelişiminde gecikme yakınması ile başvuran bir çocukta, gelişimsel öykü, ev ortamı, aile öyküsü ve psikososyal risk etmenlerini içeren ayrıntılı bir anamnez alınmalıdır. Çocuğun sadece dil gelişimi değil, tüm gelişim alanları (dil, bilişsel, hareket, ilişki, sosyal duygusal) standart bir gelişimi değerlendirme aracı ile değerlendirilmelidir. Eşlik edebilecek genetik, nörolojik ve diğer tıbbi durumlar (örneğin yarı damak) açısından ayrıntılı fizik muayene yapılmalıdır. Yenidoğan işitme taraması sonucundan bağımsız olarak tüm çocuklarda işitme testi yapılmalı, gerekli durumlarda hemogram, demir parametreleri değerlendirilmelidir. Regresyon öyküsü, ilişki alanında gecikme ya da eşlik edebilecek nörogelişimsel sorun bulgularının olması durumunda ileri değerlendirme yapılmalıdır. Dil gelişimindeki gecikmenin bilişsel gecikme, otizm spektrum bozukluğu, işitme kaybı, konuşma sesletim bozukluğu gibi sorunların ilk bulgusu olabileceği unutulmamalıdır. Dil gelişiminde gecikmesi olan çocuklara erken girişim planlanmalı, beklenmemelidir.

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Her çocuğun sağlık izlemi içerisinde gelişiminin aile merkezli yöntemler ile izlenmesi ve desteklenmesi dil gelişiminde gecikme de dahil olmak üzere, tüm gelişimsel zorlukların önlenmesi, erken tanınması ve erken müdahalesi için en etkili yöntemdir.

Anahtar Kelimeler: Dil gelişiminde gecikme, Konuşma, Erken çocukluk dönemi gelişimi

INTRODUCTION

Concerns about language development are among the most common developmental issues that lead parents to seek medical advice. Communication skills, fundamental to language development, can affect an individual's ability to engage with others, convey their thoughts, ideas, and needs. While often used interchangeably, "language" and "speech" have distinct meanings. Expressive language refers to the ability to produce speech and create visual or symbolic language outputs, while receptive language refers to the ability to understand others' language outputs visually and auditorily. Speech, on the other hand, refers to the vocal output of the language system, necessary the proper functioning of oromotor mechanisms for vocal sound production and respiratory coordination.

Speech delay is defined as development of language skills for a given age slower than expected in the same developmental sequence. An evaluation using a standardized developmental assessment tool indicates that language development is considered delayed when it falls below -1 standard deviation (SD) (1). Speech disorders refer to difficulties in the production or perception of speech sounds including articulation, breath, oromotor movements, planning, speed, rhythm, and fluency (2).

Developmental Language Disorders (DLD), previously known as specific language impairment (SLI), refer to a persistent condition not associated with any other medical or causal conditions, where children have difficulties in understanding and using spoken language.

EPIDEMIOLOGY

Research in the United States has shown that approximately 10-15% of children at the age of 2 have language delay while between the ages of 2 and 5 language delay without an underlying cause can be observed in 5-12% of cases (3,4). Language delays are more commonly seen in boys compared to girls, and the frequency of other neurodevelopmental issues that can affect language development is also higher in boys than in girls (1, 5, 6).

Language and Speech Development

The language development of all children worldwide is similar in the first 6 months. In subsequent periods, babies learn to speak through social interaction with their parents and caregivers and exposure to language (7). Over time, children begin to distinguish sounds in the language to which they are exposed. Like all areas of development, language development is most rapid during early childhood when the central nervous system develops most rapidly and neuroplasticity is most

intense. Language development progresses not only through biological development but also through the interaction of biological development with environmental factors. Therefore, both medical and environmental risk factors can contribute to language delay in children (8,9).

Risk Factors

- **Prematurity:** Babies born prematurely are at risk for language delay, as well as delays in all other areas of development such as cognition and motor skills. It has been shown that approximately one-third of babies born before 29 weeks of gestation experience language development issues (10). A meta-analysis evaluating the language development of preterm infants revealed that, irrespective of socioeconomic status and accompanying developmental difficulties, preterm infants have lower scores in complex language skills compared to full-term infants (11).
- **Poverty and low socioeconomic status:** Socioeconomic status significantly impacts children's cognitive and socio-emotional development, as well as language skills. Noble et al. (12), in their longitudinal studies, demonstrated that children from low socioeconomic backgrounds have language development scores 0.8 SD lower than those from higher socioeconomic backgrounds, with this effect observed as early as 21 months of age. Justice et al. (13) showed that poverty disrupts parent-child interaction, resulting in a 1SD decrease in language development in children by the age of 2. A study examining factors influencing child development in low to middle-income countries found a relationship between both maternal and paternal education levels and children's language scores (14). The number of words used in the home environment is crucial for children's language development, with children's vocabularies being nearly 98% parallel to their parents' vocabularies. It has been predicted that there is a 30-million-word gap in vocabulary by the age of 48 months between children from high socioeconomic backgrounds and those from low socioeconomic backgrounds (15).
- **Screen time:** The American Academy of Pediatrics recommends that children under 18-24 months of age should not be exposed to screens, and after 24 months, screen time should be limited to 1 hour per day with appropriate content, watched with parental guidance (16). A recent meta-analysis found that both excessive screen exposure and having a screen on in the background are associated with poorer language development scores in children. However, later exposure to screens, co-viewing with an adult, and watching educational programs are

associated with better language skills (17). Screen exposure at the age of one has been shown to be associated with delays in personal, social, and communication domains at ages 2 and 4 (18). Increased screen exposure has been shown to decrease the number of words used by adults and their interactions with children, with each additional minute of screen time correlating with adults using 6.6 fewer words, children vocalizing 4.9 times less, and 1.1 times fewer parent-child interactions (19). In addition to reduced interaction with parents, children with excessive screen exposure also have lower rates of engagement in book reading activities (20). A study evaluating patients presenting with speech delay in Türkiye found that 82% of children were exposed to screens for more than 4 hours per day, and approximately half of them did not have books (21).

- **Maternal depression:** Maternal depression can affect the parent-child relationship and early childhood development in all areas. Several studies have shown that children of mothers with depression experience impaired language development. These studies have found that postpartum depression affects the reciprocity between the mother and the baby, leading to reduced maternal vocalizations and speech directed towards the baby (22-24).
- **Genetics:** While there is no direct genetic etiology for language development disorders, a review found an association between language development disorders and sex chromosome aneuploidies, structural chromosomal abnormalities, and copy number variations and variants (25-28).
- **Family history:** Having a family history of language problems increases the frequency of developmental language disorders in children (29). Twin studies have shown that monozygotic twins have a higher rate of language development issues compared to dizygotic twins. Heritability estimates for language development have been found to be approximately 0.50 in various studies (30-32).

Bilingualism: It is acknowledged that bilingualism in early childhood does not cause language development delays in children; however, the acquisition rates of each language may vary depending on the child's exposure to the languages. Therefore, it is recommended to assess skills in both languages in developmental evaluations (33). The American Speech-Language-Hearing Association recommends early exposure to multilingualism and encourages parents to engage in frequent practice and support their children's speech. Initially, children may occasionally mix the grammar rules of the two languages, but this tends to improve over time (34). Speaking multiple languages at home has not been found to be associated with expressive language delays in children. A study involving a bilingual ethnic minority group from the UK birth cohort found

no association between bilingualism and expressive language delay (35).

Assessment of language development

Families of children with language delay may not always present with this complaint. Behavioral problems such as tantrums, anger outbursts, and self-regulation issues may also be presenting complaints.

A detailed history should include prenatal, natal, and postnatal history, acquisition of developmental milestones, risk factors for hearing loss, as well as family history including any neurodevelopmental disorders and psychosocial risk factors such as poverty, depression, and inappropriate language stimuli. A comprehensive physical examination should be conducted, including anthropometric measurements, skin, neurological, and dysmorphic assessments

Since language delay can be the initial symptom of other developmental conditions, all children should undergo detailed developmental assessments in all developmental domains (language, cognition, motor, and social interaction) using a standardized assessment tool. For this purpose, the International Guide for Monitoring and Child Development (I-GMCD), a comprehensive tool for monitoring, supporting, and early intervention developed in our country, and endorsed by the World Health Organization can be utilized (36).

Various tools for assessing development are available in Turkey, such as the Bayley Scales of Infant and Toddler Development, International Guide for Monitoring Child Development, Early Development Inventory, Ankara Developmental Inventory, and Gazi Early Childhood Assessment Tool, which have been standardized (37-41).

Evaluation

All children suspected of language development delay should undergo hearing assessment, even if they have passed newborn hearing screening (42).

Laboratory tests can be planned according to history and physical examination findings. However, since iron deficiency can affect development, a complete blood count and, if necessary, iron parameters can be evaluated (43).

If there is regression in developmental milestones, suggestive signs of Autism Spectrum Disorder, the presence of features that are part of developmental disorders, and no progress despite implementing recommendations such as enrichment of language exposure and social interaction in the home environment, the child should be referred for further investigation and evaluation to developmental and behavioral pediatrics, child psychiatry and child neurology (44,45).

Differential diagnosis:

In a child presenting with delayed language development, a thorough assessment involving history, physical examination,

and developmental evaluation is conducted to determine whether the delay is isolated. It should be noted that delayed language development may be associated with inadequate nurturing caregiving in the home environment, as well as hearing loss, intellectual disability, autism spectrum disorder, or it may be the initial sign of a speech disorder.

To reach their full potential, children need the five inter-related and invisible components of care, which is describes as Nurturing Care. These components are good health, adequate nutrition, safety and security, responsive caregiving and opportunities for learning (46).

- **Intellectual disability (ID):** It is a neurodevelopmental condition that is seen with difficulty in cognitive and adaptive functions, occurring in approximately 1-2% of cases (5,45). A diagnosis is made when detailed developmental assessment shows difficulty in cognitive development with a score below 70, along with challenges in conceptual, social, and practical adaptive functions of the child. The term General Developmental Delay (GDD) is a temporary diagnosis used for children aged 0-5 years who are at risk for ID. GDD is defined as a delay of ≥ 2 SD in two or more areas of development, including gross/fine motor, speech/language, cognitive, social/personal, and daily living activities. (45). It is reported that approximately two-thirds of children diagnosed with GDD receive an ID diagnosis after the age of 5.
- **Autism Spectrum Disorder:** It is a biologically based neurodevelopmental disorder characterized by difficulties in social communication and interaction, restricted and repetitive behaviors, interests, and activities (45). A prevalence study covering the year 2020 in the United States found its frequency to be 1/36 (47). In addition to language delay, these children may also exhibit difficulties in social communication skills and limited and repetitive behaviors.
- **Speech Sound Disorder:** This term encompasses difficulties with perceiving, producing, or representing speech sounds and segments, either organically or functionally. Organic speech sound disorders result from underlying motor/neurological (e.g., apraxia, dysarthria), structural (e.g., cleft lip/palate), or sensory/perceptual (e.g., hearing impairment) causes. Functional speech sound disorders are idiopathic and known as articulation and phonological disorders (48,49).
- **Hearing Impairment:** Children with moderate to severe hearing loss may struggle to understand and produce certain sounds. As receptive language development may appear normal in cases of mild hearing loss, the normality of receptive language does not rule out hearing loss. Therefore, all children with expressive or receptive language delay should undergo objective hearing assessment (50).

Management

Early childhood is a critical period characterized by rapid brain development and intense neuroplasticity, making it crucial for language development, like all other developmental domains. Children learn language very quickly during this period. Therefore, when a delay in language development is identified, the most effective intervention can be achieved during early childhood. Therefore, the “watch and wait” approach is not recommended (51).

Initially, adjustments should be made in the home environment to enrich language and enhance the child’s language development and interaction. Screen exposure should be completely avoided during the first 24 months, and selected programs should be watched with parents between the ages of 2 and 5. After the age of five, the time children spend with screens should be limited to a reasonable duration (16). Reading aloud with the child in interactive sessions should be encouraged. Interactive book reading programs such as Reach Out and Read and Dolly Parton’s Imagination Library have been shown to have positive effects on children’s language development (52). A meta-analysis evaluating the effectiveness of Parent Education Programs in early interventions for Developmental Language Disorders showed a positive relationship between parents’ participation in these programs and children’s language development (7).

High-quality preschool education has been shown to have positive effects on children’s language and cognitive development in both the short and long term (53,54). Following detailed evaluations of children with Developmental Language Disorders, it may be recommended for children and families to begin appropriate preschool education together.

Children with Developmental Language Disorders should be recommended for speech-language therapy. According to a Cochrane review, speech-language therapy has been shown to have a positive effect, especially in children with limited vocabulary and phonological issues (55).

In conclusion, beyond all interventions, it is important to monitor the development of all children, especially during early childhood when brain development is rapid, to detect and intervene early in developmental delays in areas such as language, cognition, and motor skills.

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