12 minute consultation: an evidence-based approach to the management of a child with speech and language delay

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Abstract

Background: Speech and language delay is a common developmental disorder. Persistent delay may lead to adverse effects on literacy, educational achievement and psychosocial development. Affected children are commonly referred to the otolaryngologist; hence, a structured management approach is required to facilitate diagnosis and allow for early intervention and improved outcomes.

Methods: A literature search was performed on 05 November 2012 using the MEDLINE, EMBASE and Cochrane databases with the search terms paediatric, children, speech, language, delay, disorder, investigation and management. Relevant references from selected articles were reviewed after reading the abstract.

Results: Speech and language delay may be primary, meaning there is no associated comorbidity to account for the delay, or secondary, where it can be attributed to another condition or syndrome. Secondary causes include hearing loss and syndromes such as Down syndrome amongst many others. Speech and language therapy has been shown to be effective for primary disorders. If the delay is found to be secondary in nature, onward referral to an appropriate healthcare professional is required.

Conclusions: The outpatient consultation for a child with speech and language delay should consist of a structured history and examination with the aim of identifying whether the delay is primary or secondary in nature. Relevant targeted investigations should lead to a correct diagnosis of the delay and enable appropriate treatment. This often requires a multidisciplinary approach and always requires full cooperation from the child's parents.

A child aged 30 months presents to your clinic accompanied by their mother who is concerned about poor speech development.

What should you cover in the history?

A speech and language delay signifies that milestones are occurring in the expected sequence, but at a slower-than-normal rate. A speech disorder occurs when a child is unable to produce speech sounds correctly or fluently. A language disorder occurs when there is a problem understanding what others say (described as receptive) or when there is a difficulty in conveying information and thoughts (referred to as expressive).

The consultation should aim to establish whether the delay is primary or secondary in origin by asking about signs and symptoms attributable to other conditions. This will not only identify the cause, but also gain more information about associated medical comorbidities that may affect the management of the patient.

Ask about developmental milestones for speech and language in children

Normal speech progresses through the stages of cooing, babbling, jargon, single words, word combinations and sentence formation.[1,2] Cooing is the production of vowel-like sounds, babbling is the sequential production of consonant and vowels, for example 'babababababa', and jargon is the production of longer sequences of consonant and vowels that begin to sound like sentences. The vast majority of children acquire speech and language milestones within a specific time frame. To determine whether a child has a delay, one must have an understanding of recognised and standardised milestones for speech and language development. These are outlined in Table 1.

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Table 1. Milestones for speech and language development In children

Age of Skill Acquisition	Receptive Skill	Expressive Skill
Birth to 2 months	Startles at loud noises[4] Awakens or stirs at loud noises[4]	Cries[4]
2–4 months	Calms and responds to familiar voice[4]	Coos[1,4]
4–9 months	Deliberately turns head towards sound[1,4]	Babbles[1,3–5,8]
9–12 months	Responds appropriately to 'no'[4] Follows one-step command at 12 months[3,8]	Use of jargon[4] Says 'mama' or 'dada'[3,5,8]
10–16 months	Follows single-step command[4] Responds to name[4]	Produces single words[4] Vocabulary grows to 30–50 words[4]
16–18 months		Vocabulary of 10 words[5]
18 months–2 years	Points to pictures in response to words[3,4,8]	Begins to use 2-word phrases[4] Imitates words spoken by others[4]
2 years–2.5 years	Listens to 5-to-10 min story[4]	Uses 2–to-3 word sentences[5] Vocabulary of approximately 400 words including names[5]
2.5 years–3 years	Follows two-step commands[4]	Use of plurals and past tense[5] Uses 3-to-5 word sentences[5]
3 years–4 years	Answers yes/no and who, what, where and why questions[1,4]	Uses longer sentences of 4 or more words[1] Asks questions[5]
4 years–5 years	Attends to and understands short stories[1]	Voice sounds clear[1] Communicates easily and clearly with others[1]

Ask about hearing loss

Enquire about the results of any previously performed hearing tests including the outcome of their newborn screening test. However, remember that the UK programme aims to identify those with a bilateral loss of at least 40 dB and also that hearing loss may develop after the initial screening. Ask about family history which may point towards a genetic cause. Although it is thought that at least half of all cases of permanent hearing loss have a genetic cause, the majority of these children have no associated medical problems and are therefore classified as non-syndromic.[9] The most common mode of inheritance for this group of children is autosomal recessive, hence explaining why the majority of babies are born into families with no experience or history of hearing loss.

Ask about recurrent ear infections, history of glue ear and whether grommets have been inserted previously. Much controversy surrounds otitis media with effusion (OME) and the effect on speech and language development. A literature review of prospective studies suggested that OME does have a negative impact on receptive and expressive language in preschool children.[10] However, the effect of OME on speech and language may depend on the age at which the child is assessed. A meta-analysis of retrospective and prospective studies suggested none to very small negative associations of OME with children's later language development.[11]

Ask about other aspects of global and motor development

Enquire about conditions associated with motor and global developmental delay. Communication abilities correspond to developmental and not to chronologic age. Delayed speech is common in children with cerebral palsy and may be due to the discoordination of articulation required for speech or due to an associated hearing loss or cognitive impairment.[1] Children with Down syndrome have a delay in language acquisition that is accompanied by delayed learning of speech sounds.

Ask about perinatal and birth history

Enquire about the details of the pregnancy, maternal health and post-natal period. If it has been brought to clinic, ask to see the child's red book as this may contain more detailed or any unintentionally left out information. Any birth trauma, asphyxia or congenital intrauterine infection may damage the central nervous system.[6,7]

Infections occurring within the first trimester may account for an acquired sensorineural hearing loss (SNHL) as the neural elements of the inner ear develop around 6–7 weeks. The TORCH complex is an acronym for a set of perinatal infections that can affect the foetus and encompasses toxoplasmosis and other infections such as varicella zoster virus, rubella, cytomegalovirus and herpes simplex virus. Bacterial meningitis is the most common cause of an

acquired hearing loss and may be exacerbated by the use of ototoxic antibiotics.[9] Ask about history of admission to a neonatal intensive care unit (NICU). The pilot UK newborn hearing screening data showed around 40% of children diagnosed with a permanent hearing loss had been admitted to NICU for more than 48 h.[9,12]

Establish any history of prematurity because up to half of children born prematurely are susceptible to experiencing problems with processing of language.[13]

Ask about history of traumatic brain injury

Enquire about any previous head trauma because any damage to the developing brain can affect language development and the motor control required for speech.[9] There is evidence to support that earlier age of injury is associated with poorer long-term outcomes.[14]

Ask about significant feeding or swallowing difficulties

Although most cleft palates are recognised at birth, some may go unnoticed if subtle. Enquire about hypernasal speech and persistent nasal leakage whilst feeding or eating and if present consider the possibility of a submucous cleft.[9] Cleft palate may be a feature of other conditions such as DiGeorge syndrome.

Ankyloglossia, more commonly referred to as tongue tie, is characterised by a short lingual frenulum causing tethering of the anterior part of the tongue to the floor of the mouth. In the majority of children, ankyloglossia is asymptomatic but may give rise to difficulties with breastfeeding. However, there is a lack of convincing evidence linking the condition to speech and language delay.

Ask about behaviour, social skills and the home environment

Concern over other aspects of communication such as lack of eye contact with and decreased responsiveness to family members in addition to absent behaviours such as social waving suggests an autism spectrum disorder. This disorder includes conditions such as autism and Asperger syndromes that are characterised by social deficits, communication difficulties, stereotyped or repetitive behaviours and interests and, in some cases, cognitive delays.

Childhood apraxia of speech is characterised by difficulty making sounds in the right order, and children may rely on gestures to communicate.[3] Children are motivated to communicate and are often reported to be frustrated due to the lack of speech ability.[3]

Sensitively enquire about the home life and circumstances since birth. A stimulating environment is required to acquire language appropriately, and traumatic events such as physical and sexual abuse can have deleterious effects on language development. Children with selective mutism show a consistent failure to speak in specific social situations despite speaking normally in other situations.

What should you cover in the examination?

A physical examination will complement the history for identifying signs of conditions and syndromes to which a speech and language disorder may be secondarily attributed.

Watch the child's behaviour throughout the consultation

Much information can be gathered just by watching the child's behaviour during the consultation. Listen to the child's spontaneous speech whilst he or she is talking to the parent or playing. Infants may give clues about hearing abilities in their behaviour. The child may seem disinterested in social interactions with others in the room.

Examine the ears

The external auditory canals should be examined for any evidence of a potential conductive hearing loss such as microtia or atresia. The tympanic membrane should be visualised to assess OME and any evidence of chronic suppurative otitis media. Pre-auricular pits and malformed pinna should arouse suspicion of Branchio-oto-renal syndrome, which may be associated with a conductive, sensorineural or mixed hearing loss.

Examine the oral cavity and oropharynx

Perform a complete oral examination to rule out structural defects. A cleft palate may be an isolated finding or may be a feature of a syndrome such as DiGeorge syndrome. Tongue abnormalities may be isolated or may be associated with Down syndrome if the problem is macroglossia, for example. Tongue tie should be identified by examining the lingual frenulum in the floor of the mouth.

Examine the neck

The presence of goitre may occur in Pendred syndrome, which is associated with a progressive SNHL. Branchial-derived anomalies such as the presence of a cyst, cleft or fistula may be additional features of Branchio-oto-renal syndrome.

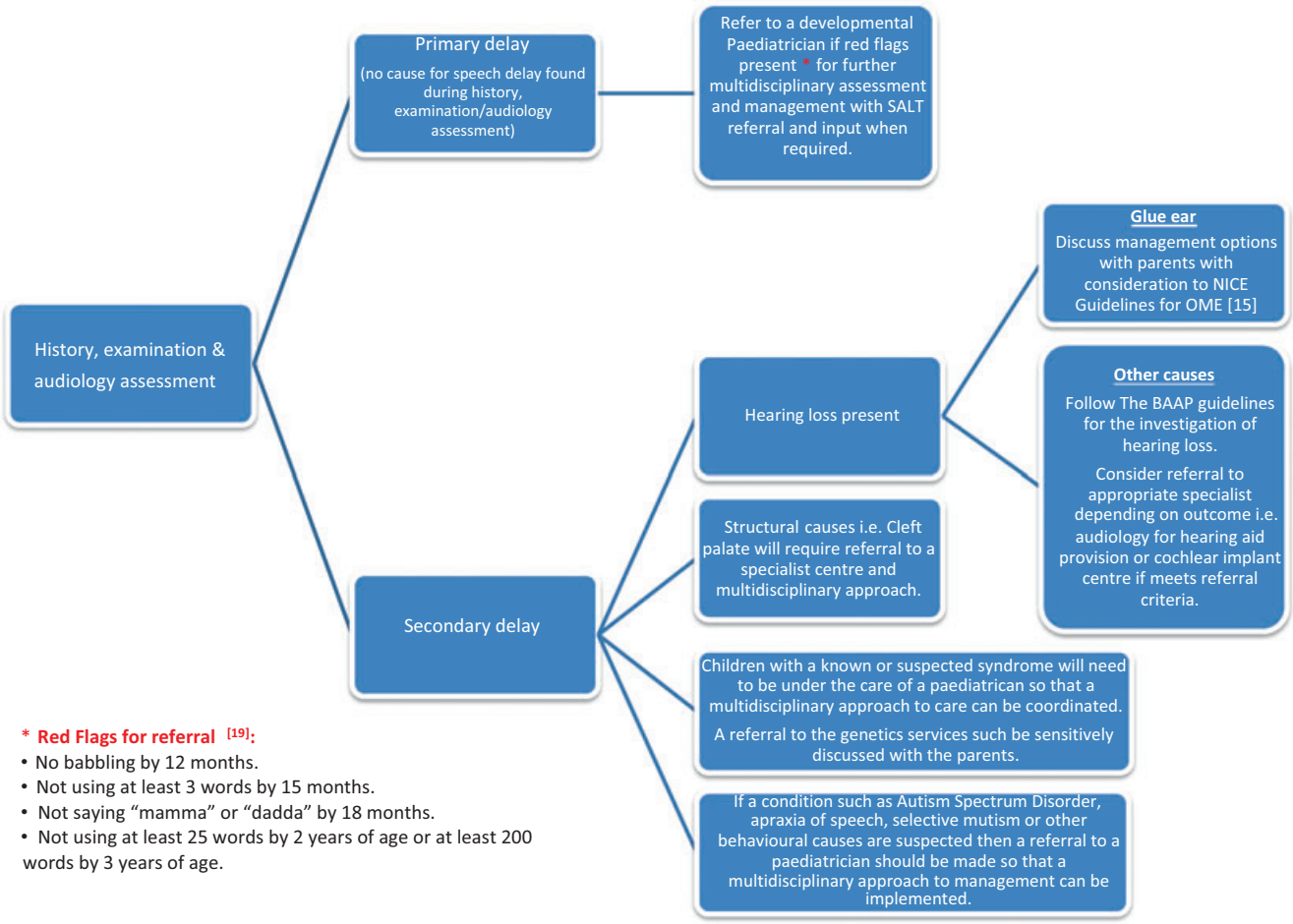

Fig. 1. A flow decision diagram for the management of a child with speech and language delay.

Perform a general examination

A general examination should be performed to look for any features suggestive of syndromes that include hearing loss or developmental delay. Look for any changes in hair colour such as a white forelock that occurs in Waardenburg syndrome. Examine the face for features suggestive of Down syndrome, Treacher Collins syndrome and Goldenhar syndrome. Eye features such as coloboma may resemble CHARGE syndrome. Be aware of the abnormal facial characteristics of DiGeorge syndrome (22q11 deletion) as these children often have speech and language problems and are easily missed. A neurological examination should be performed to identify central nervous system pathology.

Assess the hearing

Arrange a hearing test that is appropriate to the child's developmental stage rather than to the chronological age. Tympanometry should also be conducted and assessment should be made by a paediatric audiologist who has experience in dealing with children with developmental delay and special needs.

What management should you offer?

The aetiology and severity of the speech and language delay should determine the extent of investigations, the type of treatment and the scope of healthcare professionals involved in the management plan.[6] Figure 1 summarises the management of a child with speech and language delay through a flow decision diagram.

Discuss management options for OME

The National Institute of Health and Clinical Excellence (NICE) have produced guidelines for the surgical management of OME.[15] A Cochrane review concluded that the effect of grommets on hearing appears small and diminishes after 6–9 months by which time natural resolution

also leads to improved hearing in the non-surgically treated children.[16] However, the authors of the review appreciated that no studies had been performed in children with established speech, language, learning or developmental problems, so no conclusions could be made regarding treatment of such children.[16] It must also be appreciated that even though children in both groups had similar hearing thresholds at 6–9 months, this does not mean that children in the untreated group had the same hearing experience and speech and language development as the surgically treated group. Each management option for OME should be fully discussed with the parents so that an informed decision can be made for the individual child.

Offer further investigations and relevant management options for other types of hearing loss

The British Association of Audiovestibular Physicians (BAAP) have produced guidelines for the aetiological investigation into unilateral, mild-to-moderate and severe-to-profound hearing loss.[17] The guidelines refer to level 1 investigations that should be considered for every child and level 2 investigations that are required only if indicated from the history and clinical examination findings. Full cooperation and consent must be obtained from the parents for every investigation performed and referral made to other healthcare professionals. This may involve the input of educational and communication support services, the audiology team if a hearing aid is indicated or even a cochlear implant centre if already failed a hearing aid trial and meets referral criteria for implantation.

Identify red flags for immediate referral to a developmental paediatrician for children without an obvious or identified cause for their speech delay

It is reported that 60% of cases of speech and language delay tend to resolve spontaneously in children aged <3 years, despite associated comorbidity.[6] There is no clear way of determining which children will improve with a watchful waiting approach, but monitoring alone should be used with caution because two-thirds of children aged less than three and a half years will require speech therapy after 1 year without intervention.[18] Red flags indicating the need for an immediate referral to speech and language therapy (SALT) have been previously outlined and are suggested to be the absence of babbling by 12 months, not using at least 3 words by 15 months, not saying 'mamma' or 'dada' by 18 months, not using at least 25 words by 2 years of age and at least 200 words by 3 years of age.[3,19] However, as previously discussed, communication disorders are often multifactorial with causation not being obviously or immediately apparent, especially to an otolaryngologist. Therefore, the aforementioned red flags should be used as criteria for referral to a developmental paediatrician who can then further assess such children and coordinate a multidisciplinary team (MDT) management plan that will involve SALT input when required.

A systematic review of the effectiveness of SALT for children with primary speech and language disorders or delay reported that overall there is a positive effect of SALT interventions with best results for children with expressive disorders.[20] The effect for children with receptive disorders was less predictable.

Consider referral to a paediatrician or to the appropriate discipline for children with a secondary disorder or delay

Where there is concern about speech or developmental delay and no hearing loss or structural cause is found, referral to a paediatrician should be considered so that a multidisciplinary approach can be led by the appropriate specialist. Children with a secondary speech delay may have an isolated cause such as cleft palate or may have multiple comorbidities to account for the disorder such as Down syndrome. These children will also require a multidisciplinary approach to their care.

Keypoints

- Speech and language delay is a common developmental disorder.
- The delay may be primary when there is no associated comorbidity to account for the delay or secondary when it can be attributed to another condition.
- The consultation should aim to establish whether the delay is primary or secondary in origin.
- Speech and language therapy has shown to be effective for primary expressive speech and language delay.
- A multidisciplinary approach is required for both primary and secondary speech and language delays.

Information sources

This review was based on the literature search performed on 05 November 2012. The MEDLINE, EMBASE and Cochrane databases were searched using the terms paediatric, children, speech, language, delay, disorder, investigation and management. Articles including clinical trials, meta-analyses, systematic reviews and review articles were reviewed. Relevant references from selected articles were reviewed after reading the abstract.

Conflict of interest

None to declare.

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