

EAR, NOSE AND THROAT

(25) Communication and Swallowing Disorders II

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Speech Disorders

Dyslalia (Misarticulation):

- **Definition:** Faulty articulation of one or more of speech sounds not appropriate for age.
- **Types of dyslalia:**
 - a) Sigmatism (/s/ defect):
 - Interdental sigmatism.
 - Lateral sigmatism.
 - Pharyngeal sigmatism.
 - b) Back-to-front dyslalia:-
 - /k/ = /t/
 - /g/ = /d/
 - c) Rotacism (/r/ defect). → "ر" يقول "غ" أو "و" أو "ي"
 - d) Voiced-to-nonvoiced dyslalia:-
 - /g/ /k/
 - /d/ /t/
 - /z/ /s/ etc...
- **Assessment of dyslalia:**
 - I. History taking.
 - II. Physical examination: ... , tongue, ...
 - III. Investigations:
 - Audio recording.
 - Articulation test.
 - Psychometry (IQ).
 - Audiometry.
- **Management of dyslalia:**
 1. Treatment of the cause:
 - a. . Tongue tie.
 - b. . Dental anomalies.
 - c. . Hearing aids.
 2. Speech therapy with assistance and counseling.

- Onset: starts in childhood, which could last till 6-7 years of age, it is considered abnormal if it persists to adulthood.
- It rarely starts in adulthood unless there is a neurological problem.
- It is usually due to habit rather than an organic cause.
- Example of an organic cause: Tongue tie, it usually involves the letters (ر-ل) Because the frenulum is tight and short and the tip of the tongue wont reach the upper posterior surface of the teeth to produce a good sound → this problem can resolve by surgery . Not all cases of tongue tie need therapy only ones causing problem.

2-Stuttering:

- **Definition:**

The intraphonemic disruptions resulting in sound and **syllable repetitions, sound prolongations, and blocks.**

- **Normal dysfluency:**
 - 3-6 years.
 - Only repetitions.
 - No associated muscular activity.
 - Not aware.
- **Incidence of stuttering:** 1%.
- **Onset:**
 - Earliest = 18 months.
 - Latest = 13 years.
- **Epidemiology:**
 - More in families with history of stuttering.
 - Can occur in mentally retarded.
 - Very rare in the hearing impaired.
- **Gender ratio:** 4 : 1 (male : female)
- **Theories of Stuttering:**

The exact cause is unknown.

- Organic theory → **doctor goes with organic more**
- Neurosis theory.
- Learning theory

- **Three variations :**

1. **Repetition of first letter** → a a a ahmad (best prognosis)
2. **Prolongation** → aaaaaaaaaahmad
3. **Block** → start to say the first letter then block and doesn't continue then says it (worst prognosis)

- **Assessment of stuttering:**

- I. History taking.
 - II. Physical examination: APA, VPA, ...
 - III. Investigations:
 - Audio and video recording.
 - Stuttering severity (e.g. SSI).
 - Articulation test.
 - Psychometry (IQ).
- **Auditory Perceptual Analysis (APA):**
 - Core behaviors:
 - Intraphonemic disruption.
 - Repetitions.

- Prolongations.
- Blocks.
- Secondary reactions:
 - Muscular activity and struggle.
 - Interjection.
 - Word substitutions and circumlocution.
- Concomitant reactions:
 - Fear.
 - Breathing (antagonism, interruption, prolongation, cessation, ...).
 - Eye contact.
 - Skin pallor/flushing.
- **Management of stuttering:**
 - Family and patient counseling.
 - Speech therapy:
 - Indirect therapy: if not aware.
 - Direct therapy: if aware.
 - Counseling +family support. If the person is an adult and is past speech therapy or refuses there is an alternative called delayed auditory feedback device → they place it in situations like interviews , and social events
 - Concept: it delays his voice hearing. This shouldn't be placed always, as the brain will overcome it at some point. When they remove it they go back to stuttering.

- Also called in **Psychiatry Department:** stammering.
- It's not a psych problem itself, but it may be associated with psych problems.
- Stutterers are usually clever, but people's comments affect them.
- The more they try to hide it the worst it becomes.
- In tension stuttering is worse → so don't put them in tense situations or under pressure.
- Stutters find it difficult to say their name.
- An exception is something called Normal **Developmental dysfluency**, e.g. the child says baba baba baba can I come? Here he isn't repeating a letter he is repeating a word. In such cases you shouldn't make the child aware of the problem i.e. don't say why are you talking this way? Or don't talk like this .. **You should ignore** and be a model by slow talking, as it was noticed that fast speaking mothers have kids like this, so guide the mother to tell him to slow down. This condition is acceptable till the age of 4. If it converts to the three types mentioned above speech therapy is called for

3-Cluttering :

- **Definition :**

Very rapid speaking to an extent you don't realize what they are saying and the clatterers don't realize they are cluttering.

- **Etiology: idiopathic organic cause**

- **Treatment:**
 1. **Recognize that they have a problem.**
 2. **Teach them to slowdown and accept slow talk.**
 3. **Speech therapy (sessions on teaching them what to say and how to say).**

4- Hypernasality:

Definition:

Faulty contamination of the speech signal by the addition of nasal noise. It results from velopharyngeal dysfunction (VPD) or insufficiency (VPI) .

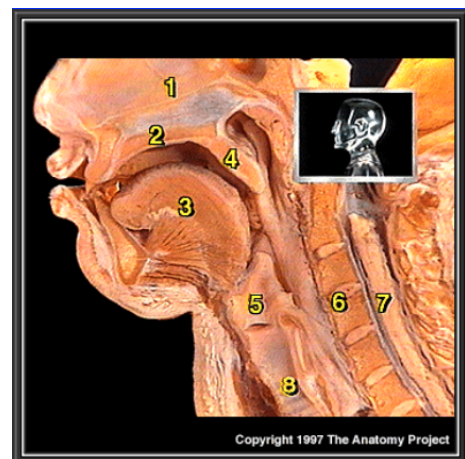
Etiology :	
Organic	Non-organic (Functional) VP Mis-learning
<p>1. Structural:</p> <p>a) Congenital:</p> <ul style="list-style-type: none"> • Overt cleft palate. • Submucous cleft palate. <p>Non-cleft causes:</p> <ul style="list-style-type: none"> • Congenital short palate • Congenital deep pharynx <p>b) Acquired:</p> <ul style="list-style-type: none"> • Adenotonsillectomy. • Palatal trauma • Tumors of the palate & pharynx. (VP Incompetence) 	<ul style="list-style-type: none"> • Faulty speech habits. • Mental retardation • Hearing impairment. • Post-tonsillectomy pain.
<p>2. Neurogenic:</p> <ul style="list-style-type: none"> • Palatal upper motor neuron lesion. • Palatal lower motor neuron lesion. 	

Effects of VPD:

- Feeding problems: nasal regurgitation.
- Psychosocial problems.
- Communicative problems:
 - Speech: hypernasality.
 - Language: DLD.
 - Voice: hyper or hypofunction.

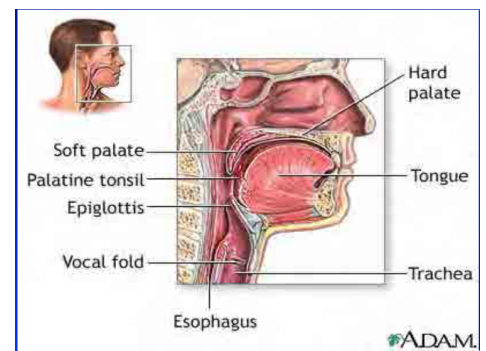
Assessment of hypernasality (VPD):

1-History



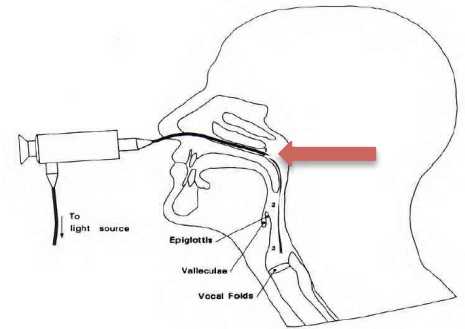
2-Examination

- General
- ENT examination : palate inspection and palpation
- Simple tests:
 - a) Gutzman's (a/i) test
 - b) Czermak's (cold mirror) test.



3-Investigation

- Audio recording.
- Articulation test.
- Psychometry (IQ).
- Nasometry
- Audiometry
- Fiberoptic nasopharyngolarygoscope (put scope at red arrow in picture)



Management:

- Multidisciplinary team.
- Management of feeding problem.
- Palatal and lip surgeries.
- Obturators.
- Communication :(language, speech, voice) therapy.
- Maxillofacial.
- Hearing.
- Feeding.



Fiberoptic nasopharyngolaryngoscopy

- Normal nasal letters include n , m, ing , the rest are all oral letters.
- Velopharyngeal valve → the soft palate is approximated close to the nasopharynx when you are using oral letters and open in the three nasal letters but in people with organic cleft palate or paralysis or non-organic causes (where they can't hear themselves and can't focus in their speech) the Velopharyngeal valve isn't functioning normally.
- There are two types:
 - 1- Closed nasality (hypo nasality) → due to common cold, adenoid, or deviated septum. The Velopharyngeal valve isn't opening when it should with m,n and ing → this is seen by ENT
 - 2- Open nasality (hyper nasality) → oral sounds are produced as nasal sounds.
- **The precise test is endoscopy, but there is a simple test called A/E test.** (Ask the patient to say aaa eee and listen to the sounds, if nasal or oral).
- Endoscopy: you go for position 1 "red arrow" in the picture above because you need to see the soft palate, posterior and lateral pharyngeal wall.
- **Cleft lip and palate:**
 - Is a multisystem problem → you need ENT, pediatrician, psychiatrist.
 - They present with speech, hearing problem.
 - Don't do an adenoidectomy except in severe cases and even if you had to remove you can't remove the whole thing, why? Because their soft palate is already weak and it barely closes the Velopharyngeal valve and so when you remove the adenoid the space grows bigger and you see them having nasal speech post op, but can be fixed under help.
 - Risk of delayed language development due to secretory otitis media, so make sure you assess both language and voice.
 - They can have hyper or hypo nasality (mostly hyper function) due to the velopharyngeal valve weakness.

5- Dysarthria:

Definition: Any combination of disorders of respiration, phonation, articulation, resonance, and prosody, that may result from a neuromuscular disorder.

Types of dysarthria:

- *Flaccid dysarthria:*
 - Lesion: lower motor neuron level.
 - Communication:
 - breathy phonation.
 - hypernasality.
- *Spastic dysarthria:*
 - Lesion: upper motor neuron level.
 - Communication:
 - strained strangled phonation.
 - Labored breathing
- *Ataxic dysarthria:*
 - Lesion: cerebellum level.
 - Communication:

- Increased equal stresses.
- Irregular articulatory breakdown
- Dyskinetic dysarthria:
 - Lesion: basal ganglia level.
- I. Hypokinetic type (Parkinsonism):
 - Breathily phonation.
 - Rapid rate.
 - Short rushes of speech with final decay.
- II. Hyperkinetic type:
 - ✓ Quick hyperkinetic (Chorea):
 - Variable rate and loudness.
 - ✓ Slow hyperkinetic (Athetosis):
 - Slow rate.
 - *Mixed dysarthria*: the most common.
 - Examples:
 1. Motor neuron disease → Flaccid + Spastic.
 2. Multiple sclerosis → Ataxic + Spastic.
 3. Wilson's disease → Ataxic + Spastic + Hypokinetic.

Assessment of dysarthria:

- 1- History taking.
- 2- Physical examination: ... , mouth, palate, ... , neurological exam, ...
- 3- Investigations:
 - Audio recording.
 - Fiberoptic nasopharyngolaryngoscopy.
 - CT/MRI brain.
 - Dysphasia test.
 - Psychometry (IQ).
 - Articulation test.
 - Audiometry.
 - Nasometry.
 - MDVP.
 - Aerodynamics (Aerophone II).

Management of dysarthria:

- Individualized:
 - Management of the cause.
 - Patient counseling.
 - Communicative therapy:
 - Articulation
 - Phonation
 - Resonance
 - Respiration.
 - Prosody.
 - Alternative and augmentative communication.

- Its mainly due to RTA , CVA → affected the motor cortex , cerebellum , basal ganglia . This leads to a production of different types:
- Cerebellar ataxia.
- Spasmodic ataxia.
- Bulbar ataxia → heavy sound, but the sentences are normal.
- Ataxic ataxia.
- It's a speech problem involving the motor arch till the articulators.
- Treatment → speech therapy.
- Don't confuse it with dysphasia which is a language problem not speech.

Language Disorders

1-Delayed Language Development (DLD)

- **Definition :**

Delay or failure to acquire language matched with age.



- **Pre-requisites of normal language development:**

- Intact brain functions (conceptual, motoric and cognitive abilities).
- Intact sensory channels; Auditory , Visual , and Tactile.
- Kinesthetic.
- Intact psyche.
- Stimulating environment.

- **Etiology of delayed language development**

- Brain damage.
- Diffuse subcortical lesion (M.R.).
- Localized brain damage with motor handicap (BDMH).
- Minimal brain damage (ADHD) → give medication then speech therapy.
- Sensory deprivation.
- Hearing impairment: Conductive, Sensory-neural , Mixed , Central auditory processing disorder.
- Visual impairment.
- Psychiatric illness: Autism. , Autism Spectrum Disorder (ASD).
- Environmental deprivation
- Idiopathic (Specific Language Impairment) → the best prognosis

- **Assessment of DLD**

- I. History taking.
- II. Physical examination.

III. Investigations:

Psychometry (IQ).

Audiometry.

Brian Imaging

EEG

Ophthalmological consultation

- **Management of DLD:**

- Early detection.
- Providing the suitable aid
- Hearing (HA or CI).
- Visual Aid.
- Physiotherapy
- Family counseling.
- Direct language therapy (Individual- group).
- Medications (Autism and ADHD).

- A Normal child says his first word at the age of one, his first sentence composed of 2 words at the age 1.5 to 2 years. After two years if the child fails to utter two consecutive words, he should be referred and family counseling is initiated. The only time you should intervene before that is when you suspect a **hearing problem**. So, if you have a one-week-old neonate with shouting around and you find no startle response you should start working him up immediately.
- The critical years for language are the **first 3 years**.
- You do a cochlear implant when you have bilateral severe to profound sensory-neural hearing loss before the age of 3-5. They need a 3-year rehab program.

2- Dysphasia:

- **Definition:**

Language deterioration after its full development due to brain insult: infarction, hemorrhage, atrophy, etc.

- **Etiology;**

- CVA
- Neoplastic
- Traumatic
- Inflammatory
- Degenerative
- Metabolic
- Poisoning

- **Types of dysphasia:**

1. Expressive → poor expression, this is very traumatic psychologically.

2. Receptive → can speak but he doesn't understand.

3. Mixed predominantly expressive → understands but fails to express. May come with perseveration.

4. Mixed predominantly receptive.

5. Global.

- Mixed is the most common

- **Assessment of Dysphasia:**

1. History taking.

2. Physical examination: ... , neurological exam.

3. Investigations:

- CT / MRI brain.

- Dysphasia test.

- Psychometry (IQ).

- Audiometry.

- **Management of the cause:**

- Treatment is individualized.

- Treat the cause.

- Physical rehabilitation (Physiotherapy).

- Family counseling.

- Language therapy.

- Alternative and augmentative communication → Cards, sign boards, computers.

General notes:

- Over all CVA , RTA , and trauma are the most common in dysphasia , dysarthria
- Speech course → central control passes through a motor pathway till it reaches the articulators
- All speech problems shouldn't persist in those over 5-7 years of age max.
- Most speech problems are non-organic

For yourself:

- **Central language control**

The left hemisphere is the processor of language functions in almost all people regardless handedness. It is the dominant hemisphere.

Language areas are distributed along the rolandic fissure.

Anterior language area mainly in the temporal region concerned with expressive aspect.

Posterior language area mainly in the parietal region concerned with receptive aspect.

Structural domains of language:

- Semantics; meaning.
- Phonology; articulation
- Syntax; grammar

- Stages of normal language development

- 2-4 months; Babbling
- 6 months; Vocal play
- 9 mo-1 year; 1st word
- 1-1/2 years; 20 words
- 2 years; 200 words, 2 word sentence
- 3 years; 2000 words, 3 word sentence
- 4 years; 4 word sentence
- 5-7 years; Full maturation of all language modalities.

Summary

-Speech Disorders:

1- Dyslalia:

Faulty articulation of one or more of speech sounds not appropriate for age. -

Onset: starts in childhood, which could last till 6-7 years of age, it is considered abnormal if it persists to adulthood. -

Usually from habit. -

Treat cause if present (dental problems, tongue tie, hearing impairment) + speech therapy. -

2- Stuttering: -

The intraphonemic disruptions resulting in sound and syllable repetitions, sound prolongations, and blocks. -

Need speech therapy As well as family and patient counseling. -

3-Cluttering : -

Very rapid speaking to an extent you don't realize what they are saying and the clatterers don't realize they are cluttering. -

Need Speech therapy. -

4- Hypernasality: -

Faulty contamination of the speech signal by the addition of nasal noise. It results from velopharyngeal dysfunction (VPD) or insufficiency (VPI). -

Most precise investigation is endoscopy. -

Treat organic cause if present (e.g. cleft palate). -

Communication therapy. -

5- Dysarthria: -

Any combination of disorders of respiration, phonation, articulation, resonance, and prosody, that may result from a neuromuscular disorder. -

Mainly from CVA, RTA. -

Needs speech therapy. -

-Language Disorders:

1- delayed language development:

Delay or failure to acquire language matched with age.

Early detection is key!

Check IQ by psychometry, and check hearing by audiometry.

If hearing is impaired: cochlear implant, hearing aid.

If child is autistic or ADHD: give suitable medication.

Family counseling and language therapy.

2- Dysphasia:

Language deterioration after its full development due to brain insult.

Mainly from CVA, RTA.

Check history, do neurological examination, CT, MRI, psychometry and audiometry.

Treatment is individualized:

Treat the cause, rehabilitation, family counseling, language therapy, alternative and augmentive communication (boards, cards, computers).

Generally:

-All speech problems shouldn't persist in those over 5-7 years max.

-Most speech problems are non-organic.

-Over all CVA and RTA are the most common in dysphasia (language disorder) and dysarthria (speech disorder).

-Speech therapy is essential in treatment.

MCQ's :

1- A 5 year-old female child was born with cleft palate for which she underwent multiple surgical procedures. However, after the last surgery she is currently presented with increased nasal resonance in her speech with evident nasal air emission.

What is the main speech problem of this child?

- A. Dysarthria
- B. Dyslalia
- C. Hypernasality
- D. Stuttering

2- Three-year-old female child was diagnosed as delayed language development due to bilateral severe sensori-neural hearing loss. She did not benefit from using hearing aids for continuous six months. A CT scan of the temporal bone was normal. Her intelligence was average.

What is the next step of management?

- A. Cochlear implantation
- B. Family counselling
- C. Ventilation tubes insertion
- D. Language therapy

Answers:

1- C

2- A

For mistakes or feedback

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