

Disorders of language and speech

Samuel Komoly MD PhD DHAS
Professor and Chairman
Department of Neurology
<http://neurology.pote.hu>

major categories disorders of language and speech

- ‘cortical types’ – aphasias (focal) or diffuse cortical (cerebral) dysfunctions, (‘pure dysarthria’ (defect of articulation): multiple lacunar infarcts, and/or opercular ischemia)
- ‘without cortical dysfunction’ (dysarthria, dysphonia, cerebellar speech, „extrapyramidal” speech etc.

major categories disorders of language and speech: „cortical types”

- **Aphasia** (or dysphasia)
 - a loss or impairment of the production and/or comprehension of spoken or written language due to the damage or dysfunction of cortical speech-centers and their connections
- Disturbance of speech and language because of **diffuse impairment** of higher mental functions
 - confusion, delirium,
 - mental retardation
 - dementias (e.g. Alzheimer disease: gradual impairment of all elements of language, but no classic aphasic syndromes develops)
 - schizophrenics, autistic individuals (meaningless phrases, neologism)

major categories disorders of language and speech with **without cortical** dysfunction

- **dysarthria, anarthria:** defect of articulation due to the **dysfunction of muscles** of articulation
 - Mental functions, comprehension of spoken and written language intact, and grammatical structure of sentences are intact.
 - ‘**Nasal character**’ of speech, **dysphagia:** **fluid regurgitation through the nostril** in mild cases, impaired swallowing - **risk of aspiration!!)**
diseases causing dysarthria:
 - bilateral upper motor neuron (corticospinal track lesion) due to repeated strokes, or advanced multiple sclerosis– ‘pseudobulbar palsy’.
 - Lesions of medulla oblongata and/or IX-X cranial nerves. Lower motor neuron damage (fasciculation! e.g. in ALS),
 - MYASTHENIA GRAVIS
- **dysphonia, aphonia:** due to **larynx** dysfunction
 - alteration or loss voice **due to disease of the larynx or its innervation**
 - voice becomes hoarse
 - *most common cause of this problem is the common cold*
 - unilateral recurrent laryngeal nerve paralysis and lesions of the vagus nerve

major categories disorders of language and speech with „intact” mental function

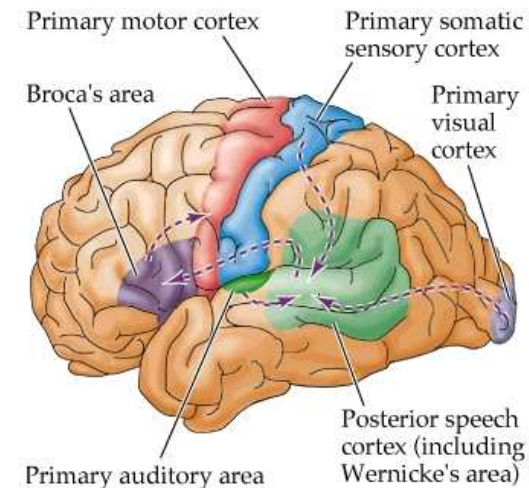
- Ataxic speech (cerebellar degeneration, multiple sclerosis)
- **Soft and monotonous** speech (in Parkinson disease)
- **Spasmodic dysphonia** (propositional speech affected, emotional speech intact (one example for focal dystonia) (**Dystonias** are agonists-and antagonists muscle contracts simultaneously. Examples include blepharospasm, spasmodic torticollis, oromandibular, spasmodic dysphonia, and writer's cramp – treatment botulinum toxin – BOTOX -)

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Major types of aphasia

- **Motor** or Broca's aphasia ('non-fluent')
- **Sensory** Wernicke's aphasia ('fluent')
- **Global** (total, sensori-motor) aphasia (loss of all speech and language functions)
- **Disconnection language syndromes**
 - Conduction aphasia *arcuate fasciculus*
 - Transcortical motor
 - Transcortical sensory
 - Pure world-deafness
 - Pure world-blindness
 - Pure word mutism
 - Anomic aphasia

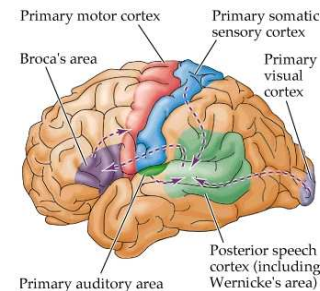


Motor or Broca's aphasia ('non-fluent')

- Loss of motor speech and agraphia (not because of palsy – e.g. left hand)
- Understanding of spoken and written language can be virtually preserved

Motor or Broca's aphasia ('non-fluent') anatomy

- Cerebral structures concerned with language output and articulation: Broca's area (Br. 45), pre-postcentral gyrus (Br. 44, 43) striatum, internal capsule
- Large lesions damaging all three structures produce severe motor aphasia, but comprehension remains well preserved (anterior insula, frontotemporal operculum, prerolandic motor areas can be damaged as well: contralateral faciobrachial spastic hemiparesis)
- If **one** of the „language” structures are affected only: good chance for recovery
- Broca's area per se:
(„mini Broca's aphasia”)



Motor or Broca's aphasia ('non-fluent')

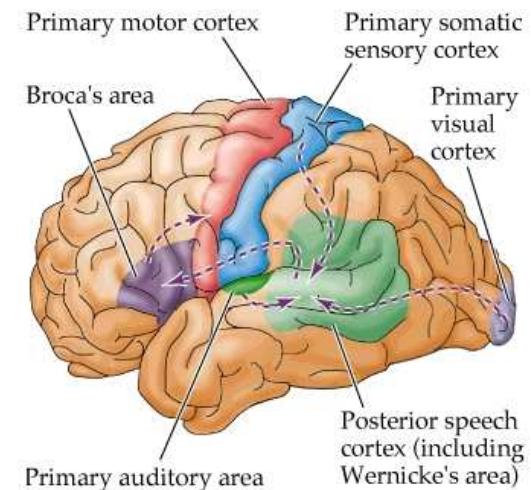
- In most severe cases **no word** expressed aloud, still the patient has **no difficulty chewing, swallowing, cleaning the throat, even vocalizing without words** (muscles are not paralyzed)
- Sometimes one or two words can be spoken e.g. 'yes', 'no' etc, or simple, important words or short stereotypes (good morning, 'go bath room', telegraphic character)

Motor or Broca's aphasia ('non-fluent')

- The patient recognizes his lack of ability to speak and mistakes. He is irritated, frustrated, sometimes despaired, angered
- The patient can communicate with gestures, facial expressions, vocalization without words ('emotional speech')
- Broca's aphasia usually improves remarkably, if not, the patient is still functioning as a „social organism”,

Wernicke's aphasia (fluent, sensory)

- Impairment in the understanding of speech, word elements both in spoken and written language
- Patient talks fluently, gestures, speech is produced without effort, intoned and articulated
- No frustration in finding the words!



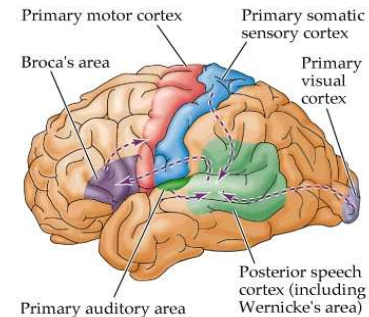
Wernicke's aphasia (fluent, sensory)

- „Patient's speech is remarkable devoid of meaning”
- many of meaningless, often malformed, inappropriate words: literal **paraphasia** („the grass is greel’, verbal paraphasia (‘the water is hole’)
- **Neologism**: syllables and words not exist in the language
- Fluent paraphasic speech: jargon aphasia

Wernicke's aphasia (fluent, sensory)

- „Great difficulties in functioning as a social organism”, they can not communicate (to understand what is going on Neither spoken or written nor ‘gesture’ language
- May be misdiagnosed as psychotic, especially with jargon aphasia and without other major neurological symptoms

Wernicke's aphasia (fluent, sensory) anatomy



- Brodmann 22 in the lateral part of planum temporale in posterior perisylvian region
- Minor changes in the size and location of the lesion can cause profound variations of Wernicke's aphasia or can lead to conduction aphasia, or pure word-deafness (pure auditory agnosia)

Global (total, sensory-motor) aphasia)

- All aspects of speech are affected
- Many patients are initially mute
- Later they may start to understand simple commands (close your eyes... show your tongue, move your...)
- Improvement can be flowed by repeating the simple task (note of fatigue), giving double, triple tasks end up as a 'Broca's aphasia.
- If the sensory component is not improving in 10-14 days the prognosis can be poor (Wernicke' aphasia)

Broca's aphasia

- Non-fluent
- Understanding of spoken and written language can be virtually preserved
- Prognosis favorable (able functioning as a „social organism“),

Wernicke's aphasia

- Fluent
- Understanding spoken and written language usually heavily affected
- Prognosis less favorable (not able functioning as a „social organism“)

Global aphasia

- Mute
- All aspects of speech are affected
- Improvement of understanding (Broca-type course) suggest more favorable prognosis