Head and neck tumors

Klinika Neurologii i Pediatrii WUM
Head and neck tumors

- In the head and neck we may find many organs and tissues of different origin and different histology development – it explains a variety of diseases occurring in this region.
The concept of "head and neck cancer" comprises a group of epithelial malignant neoplasms, localized in the upper respiratory and gastrointestinal tracts:

- mouth
- throat
- larynx
- nasal cavity
- paranasal sinuses

and tumors:

- ear
- salivary glands
- thyroid
Nose and paranasal sinuses tumors

- very rare in children
- wide variation in histology
- divided into tumors with epithelial origin and non–epithelial tumors (mesenchymal)
Epithelial tumors

- Very rare
- **Benign:** papillomas or adenomas
- Malignant: squamous cell carcinoma, adenocarcinoma, adenoid–cystic carcinoma, mucoepidermoid carcinoma
Non-epithelial tumors

- **Benign tumors:**
  - **FIBROMAS:** very rare in children, pedunculated, single
  - **CHONDROMAS:** ethmoid sinuses, maxillary sinuses, nasal septum
  - **OSTEOMAS:** quite often, localization—frontal and maxillary sinuses, grow slowly, symptoms appear at his large sizes
Non-epithelial tumors

- **Benign tumors**
  - LIPOMAS: nasal cavity, paranasal sinuses
  - MYXOMAS: come from embryonical mucosal tissue, rare
  - HEMANGIOMAS: frequent tumor of the nose, the mucosa of the mouth and the maxillary sinuses in children, capillary hemangioma, cavernous
Non-epithelial tumors

- **Benign tumors**
  - NEUROECTODERMAL TUMORS: mainly concerns children, develops from ectopic glial tissue within the base of the nose, is divided on the outside of the nasal (detected shortly after birth) and inside the nasal
  - ADAMANTINOMAS: tumor of embryonic origin, located in the jaw, locally malignant
  - ANGIOFIBROMAS JUVENILE
Non–epithelial tumors

- **MALIGNANT TUMORS**

- **SARCOMAS from muscle tissue**
  - rhabdomyosarcoma – derived from striated muscle, a common tumor in the nose, maxillary sinus and neck, very quickly give metastasis to the bones, lymph nodes, lungs,
  - 3–year survival rate in children is approx. 52–75% of patients
  - leyomiosarcoma – from smooth muscles, very rare
Non–epithelial tumors

- Malignant tumors
  - SARCOMAS from connective tissue
  - fibrosarcoma
  - chondrosarcoma
  - osteosarcoma: develops in children as the primary tumor, the first symptom may be a tumor in the jaw with no perceptible change in the jaw
Non–epithelial tumors

- Malignant tumors
  - SARCOMAS from the vascular tissue
  - angiosarcoma
  - hemangiopericytoma
  - Kaposi's sarcoma
Malignant tumors from lymphoreticular tissue

- Lymphoma malignum
- Plasmocytic

Malignant tumors in children occur almost exclusively as lymphoma, which are divided into Hodgkin's and non-Hodgkin's. Lymphoma spread to the lymph nodes, lymphatic tissue, the starting point may be, for example – adenoid
Cancers of the larynx and trachea

- Very rare in children
- Causing the typical symptoms of airway obstruction: stridor, shortness of breath, hoarseness – the type and severity depending on the location of the tumor

**BENIGN TUMORS**
- hemangioma, fibroma, chondroma, neurofibroma, schwannoma

**MALIGNANT TUMORS**
- In children sarcomas are the most common, especially rhabdomyosarcoma
Nasopharyngeal tumors

- BENIGN TUMORS (benign neoplasms) are more common than malignant
  - papillomas, fibromas, lipomas, hemangiomas, lymphatic hemangiomas, neuroma–fibroid tumors, neuroblastomas, gliomas
- Angiofibroma juvenile
  - locally malignant, primary site of development is the nasopharynx or the rear part of the top and side walls of the nose, through the pressure causes destruction of bone occurs only in boys mostly in the age of puberty, symptoms—nose obstruction and epistaxis
Nasopharyngeal tumors

- MALIGNANT TUMORS
  - lymphomas
  - epithelioma with low stage of differentiation
  - rhabdomyosarcoma
Salivary glands tumors

- Branchial cleft cyst
- Cysts associated with salivary calculi
- Tumor within the salivary glands may be swollen lymph nodes

**BENIGN TUMORS**

- common hemangiomas – tend to spontaneous regression, in most children are disclosed in the first years of life

**MALIGNANT TUMORS**

- They don’t occur in children
Benign tumors of the outer ear

- **CAPILLARY HAEMANGIOMAS**: affects the outer ear and its surroundings, are congenital tumors, usually grow to 3–5 years of age, then they undergo spontaneous involution.
- **OSTEOMAS**: usually bilateral, may be the result of chronic irritation of the ear canal.
- **ADENOMAS**: very rare.
Benign tumors of the middle ear

- GLOMUS TUMOR: in the case of tumor growth in the tympanic cavity or bulb of the jugular vein -> there are symptoms from the ear:
  - pulsating noise in the ear
  - conductive or mixed hearing loss
  - dizziness
  - periodic bleeding from the ear
  - facial nerve paralysis
Benign tumors of the middle ear

- CHOLESTEATOMA:
  - DEVELOPS IN PYRAMID temporal bone and destroys the structure of the middle and inner ear
  - SENSORIAL HEARING LOSS
  - BALANCE DISORDERS
  - Facial palsy
Benign tumors of the middle ear

- MENINGIOMAS OF THE REAR AND MIDDLE CRANIAL FOSSA
- HISTIOCYTOSIS X: Langerhans cell hyperplasia in children occurs as eosinophilic granuloma of the middle ear, the symptoms grow slowly, the disease begins with subfebrile, weakness, leakage from the middle ear, swelling of the external ear
- Neurofibroma in Recklinghausen disease can grow into the temporal bone
The most common solid tumors
They constitute approx. 20–25% of cancers occurring in children under 14 yr
the average age at diagnosis is 7 years and 10 months.
M:F = 1.2: 1
Tumors CNS are a diverse group in terms of histopathology, location, growth
Etiology

- It is not fully known

- Primary brain tumors develop in some hereditary diseases:
  - NF1: optic or hypothalamic tract glioma, meningioma, neurofibroma
  - NF2: schwannoma, ependymoma
  - TSC: subependymal giant cell astrocytoma
Etiology cont.

- Environmental factors
  - electromagnetic radiation
  - pesticides
  - exposure to nitrosamines
  - exposure to ionizing radiation
  - primary and secondary immunodeficiency (tumors of lymphoid origin)
Brain tumors classification

- There is no single classification and the most common classifications (WHO, other) still evolve according to molecular findings in brain tumors.

According to tumor location:
- Supratentorial – develop in brain hemisheres, and midbrain (diencephalon, mesencephalon) gliomas, ependymomas, PNETs and so-called midbrain tumors growing in hypopyseal, pineal regions are most common.
Brain tumors classification

According to tumor location:
- **Infratentorial** – brainstem and cerebellar tumors: medulloblastoma of the cerebellum and gliomas of the brainstem are most common

According to
- malignancy grade (WHO classification I–IV),
- histopathological features,
- newer, molecular classifications
Factors influencing brain tumors symptomatology:

- Tumor growth rate (malignant and rapidly growing tumors give acute symptoms; they rarely produce seizures as presenting signs)
- Presence of hydrocephalus
- Extent of brain oedema (related mostly to the malignancy of the tumor)
- Tumor location (focal neurological symptoms, hormonal disturbances, etc. depend on the function of affected brain region)
- Patient’s age
Clinical symptoms of brain tumors

If causing hydrocephalus/increased CSF pressure:
- Headache, especially in the morning behavioural changes
- Nausea and vomiting, typically in the morning, often bringing relief in headache
- Blurry vision

Brainstem tumors:
- Focal signs: diplopia, dysarthria, dysphagia, ataxia, other
- Anisocoria
- In younger children: atypical head and neck positiong, sometimes resembling torticollis

Supratentorial tumors:
- Focal signs: most typically hemiparesis, or sensory disturbances, other
- in some cases focal seizures
- in some tumors of hypophyseal, or pineal regions – hormonal disturbances can occur
Diagnostics and treatment of brain tumors

Diagnostics:
- Neurological examination
- Neuroimaging: CT, MRI
- in some cases cerebrospinal fluid (CSF) analysis might be helpful

Treatment
- Surgery
- Radiotherapy
- Chemiotherapy
- Other (gamma knife,
Neck tumors

- In childhood the neck tumors are mostly represented by enlarged lymph nodes,
- Other tumors are usually benign tumors:
  - Neck cysts – lateral and central
  - Haemangiomas and lymphomas
Neck tumors cont...

- Developmental tumors
  - Central neck cysts: develop from remnants of the thyrolingual duct
  - Cysts and lateral fistulas of the neck: origin from the developmental abnormalities of branchial arches, have typical constant anatomical position
  - Dermoid cysts and teratomas: are very rare, usually are located in the vicinity of the median body line, smooth, soft, they have a capsule, lie superficially
Neck tumors cont.

- DEVELOPMENTAL TUMORS cont.
  - Cysts of the larynx
  - Diverticula of the posterior part of the esophagus

- EMBRYONIC TISSUES CANCERS
  - Chordoma
  - Branchial cleft carcinoma
Neck tumors cont.

- TUMORS OF GLANDULAR ORIGIN
  - Tumors of the thyroid gland: neonatal goitre, juvenile goiter, purulent inflammation of the thyroid gland, thyroid tumors
    - parathyroid tumors
    - tumors of the salivary glands

- TUMORS OF NERVOUS ORIGIN
  - schwannomas
  - carotid body tumor

- TUMORS OF VASCULAR ORIGIN
  - hemangioma, lymphangioma, carotid artery aneurysm

- Ultrasonographic diagnosis