RADIO- AND RADIOCHEMOTHERAPY OF HEAD AND NECK TUMORS

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• 550 000 NEW PATIENTS/YEAR WITH HEAD AND NECK CANCER ALL OVER THE WORLD (3-7 %) – THE SIXTH MOST COMMON HUMAN CANCER

• ETIOLOGY: TOBACCO, ALCOHOL, BETEL NUTS, POOR DENTAL HYGIENE, NUTRITIONAL DEFICIENCY, VIRAL (HPV), GENETIC

• 60 % ARE STAGE III-IV. AT THE TIME OF THE DIAGNOSIS
INCIDENCE OF ORAL CAVITY AND PHARYNGEAL TUMORS IN CENTRAL EUROPE (cases/100 000 inhabitants)

<table>
<thead>
<tr>
<th>Years</th>
<th>Male</th>
<th>Female</th>
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<tbody>
<tr>
<td>1965–69</td>
<td>2,72</td>
<td>0,52</td>
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<tr>
<td>1970–74</td>
<td>3,57</td>
<td>0,58</td>
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<tr>
<td>1975–79</td>
<td>5,04</td>
<td>0,70</td>
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<td>1980–84</td>
<td>8,09</td>
<td>0,91</td>
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<td>1985–89</td>
<td>11,48</td>
<td>1,25</td>
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<td>1990–94</td>
<td>16,32</td>
<td>1,82</td>
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<td>1995–99</td>
<td>23,92</td>
<td>2,67</td>
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<tr>
<td>2000–04</td>
<td>35,17</td>
<td>3,85</td>
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<td>2005–09</td>
<td>51,16</td>
<td>5,42</td>
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TUMORS OF THE HEAD AND NECK REGION CAN CAUSE A HIGH VARIETY OF SYMPTOMS – BECAUSE OF THEIR LOCATION – WHICH ARE OFTEN NOT SPECIFIC

OPERATION OF A NECK DISEASE (LYMPH NODE) WITHOUT DETAILED HEAD AND NECK EXAMINATION IS FORBIDDEN
SYMPTOMS

- ULCERATIVE OR EXOPHYTIC LESIONS
- PAIN
- HOARSENESS
- NASAL SOUND
- SWALLOWING DIFFICULTIES
- SPEACH DIFFICULTIES
- BLEEDING
- MASS ON THE NECK
LOCALIZATION OF HEAD AND NECK CANCERS

LIP, ORAL CAVITY
PHARYNX (Epipharynx, Mesopharynx, Hypopharynx) ~ 40 %
LARYNX ~ 40 %
NASAL, PARANASAL SINUSES
SALIVARY GLANDS
EYE, ORBIT
THYROID GLAND

HISTOLOGY

90% planocellular carcinoma
10% others: lymphoepithelial-, adenocarcinoma, lymphoma, sarcoma, melanoma

OCCULT METASTASIS IS FREQUENT!
UICC TNM CANCER STAGING
EXAMINATION

- HISTORY
- PHYSICAL EXAMINATION
- INSPECTION WITH HEADLIGHT OR HEADMIRROR
- ENDOSCOPE
- PALPITATION
- CT, MRI, PET-CT, PANOREX
- HISTOLOGY, ASPIRATION CYTOLOGY
- CHEST X-RAY
- ETC. (HPV)
T3N0 BASE OF TONGUE TUMOR
POSITRON EMISSION TOMOGRAPHY (PET)

PALATE TUMOR WITH SUPRACLAVICULAR LYMPH NODES ON BOTH SIDES (N2c)
EXTERNAL RADIOTHERAPY

MEGAVOLTAGE EQUIPMENT:

LINEAR ACCELERATOR - 6-18 MV PHOTONS or ELECTRONS

LINAC
TREATMENT PLANNING

CT-based 3D treatment planning

- Conformal 3D radiotherapy
- Irregular, individually shaped fields using “multi-leaf collimator”
BRACHYTHERAPY (BT)
CARCINOMA OF THE BASE OF TONGUE - BRACHYTHERAPY
IN THE TREATMENT OF HEAD AND NECK TUMORS LOCOREGIONAL TREATMENT IS A BASIC REQUIREMENT
Stage III-IV. base of tongue cancer.

Histological results of N0 neck after dissection.
MULTIMODAL TREATMENT OF HEAD AND NECK TUMORS

Surgery
Radiotherapy
Chemotherapy

29.
ADVANTAGES OF RADIOTHERAPY IN THE TREATMENT OF HEAD AND NECK TUMORS

• AVOIDING OF RADICAL SURGICAL METHODS

• PRACTICALLY NO MORTALITY

• GOOD COSMETIC AND FUNCTIONAL RESULTS

• ELECTIVE TREATMENT OF THE LYMPH NODES

• IN CASE OF FAILURE OF RADIOTHERAPY THE EFFECTIVENESS OF „SALVAGE” SURGERY IS SATISFACTORY

• IN SOME CASES IT IS AN EXCLUSIVE TREATMENT

• THERE ARE NO SIGNIFICANT CONTRAINDICATIONS
AIM OF RADIATION THERAPY

CURATIVE  (total dose 50-80 Gy)
PALLIATIVE  (total dose 30-60 Gy)

Curative treatment

• **DEFINITIVE** (exclusive)

  RADIOTHERAPY  RADIOCHEMOTHERAPY

• **POSTOPERATIVE** (total dose: 50-66 Gy)
  (eradiacation of microscopical residualis tumor cell)
BEFORE RADIOTHERAPY

DENTAL CARE

IS REQUIRED!
MULTIMODAL TREATMENT OF HEAD AND NECK TUMORS

T1-2 N0-1

- RADIOTHERAPY or SURGERY (except epipharyngeal cancer)

T3-4 N0-3 or T1-4 N2-3

- RADIO/CHEMO/THERAPY
  - SURGERY +/- POSTOPERATIVE IRRADIATION or POSTOPERATIVE RADIOCHEMOTHERAPY
  - INDUCTION CHEMOTHERAPY + RADIOCHEMOTHERAPY OR SURGERY
  - CETUXIMAB + RADIOTHERAPY
RADIOCHEMOTHERAPY (RCT) IN THE THERAPY OF LOCOREGIONAL ADVANCED PHARYNGEAL AND LARYNGEAL TUMOR

CONCOMITANT RCT: STANDARD TREATMENT

100 mg/m² Cisplatin (days: 1, 22 & 43)

LOCAL TUMOR CONTROL: 18-26%
OVERALL SURVIVAL: 6.5%

RADIOSENSITIVITY OF PHARYNGEAL TUMORS

NASOPHARYNX

OROPHARYNX

tonsilla, tonsillar arch, palatum molle, uvula, lateral and posterior pharyngeal wall, base of tongue

HYPOPHARYNX

sinus pyriformis, posterior pharyngeal wall, postcricoid region

Radiosensitivity
RT OF NASOPHARYNGEAL TUMOR

• 90% poorly differentiated nasopharyngeal cc. (lymphoepithelioma)

• Radiosensitive tumor!

• PRIMARY TREATMENT = RADIO/CHEMO/THERAPY
  66-72 Gy EBI
  60 Gy EBI + 4 x 4 Gy BT

EBI: external beam irradiation; BT: brachytherapy
RT OF NASOPHARYNGEAL TUMOR

Lateral field
Epipharynx + upper neck

Anterior field
Lower neck
BT OF NASOPHARYNGEAL TUMOR
RT OF OROPHARYNGEAL TUMOR

PRIMARY TREATMENT: RT* or CONCOMITANT RCT**

T1-2 N0-1 uvula, tonsilla, base of tongue: SURGERY
T3-4, N2-3: RADICAL SURGERY + POSTOP. RT
QUALITY OF LIFE!!! (After surgery)

* Radiotherapy
** Radiochemotherapy
RT OF OROPHARYNGEAL TUMOR

POSTOPERATIVE RT: 50-60 Gy
PRIMARY RT: 66-72 Gy
BT – BASE OF TONGUE
3-DIMENSIONAL (CONFORMAL) RADIOTHERAPY OF THE OROPHARYNGEAL TUMOR
3-DIMENSIONAL (CONFORMAL) RADIOTHERAPY OF THE OROPHARYNGEAL TUMOR
3-DIMENSIONAL (CONFORMAL) RADIOTHERAPY OF THE OROPHARYNGEAL TUMOR
RT OF HYPOPHARYNGEAL TUMOR

PRIMARY TREATMENT:

T1-2N0 → SURGERY +/- POSTOP. RT or RT
N+ or T2-4 → SURGERY +/- POSTOP. RT/RCT or RCT or INDUCTION CHEMOTHERAPY
**RT OF GLOTTIC TUMOR**

**GLOTTIC-SUPRAGLOTTIC TUMOR:**
- T1-2 N0: RT ALONE or SURGERY (QUALITY OF LIFE!!!)
- T1-2 N+, T3 N0/+, EARLY T4: CONCOMITANT RCT or TOTAL LARYNGECTOMY (QOL!!!)
- ADVANCED T4 (SOFT TISSUE - BESE TONGUE): TOTAL LARYNGECTOMY + POSTOP. RT

**SUBGLOTTIC TUMOR:**
- STANDARD TREATMENT: TOTAL LARYNGECTOMY + POSTOP. RT
T1-2N0 vocal cord carcinoma

- high differentiated T1N0
  - transoral laser or RT
- others
  - RT

local recurrence

- previously no RT
  - RT
    - recovery
      - control
    - local recurrence
      - inapposite for PO
      - unadapted for PO-re
    - operation
      - PL
      - TL

- previously RT
  - RT

RT: radiotherapy, PO: partial operation, PL: partial laryngectomy, TL: total laryngectomy
CUTAN LYMPHOMA – RT

before RT

after RT
SKIN CANCER - RT

before RT

after RT

50.
5-YEAR RESULTS OF PHARYNGEAL AND LARYNGEAL TUMORS TREATED WITH RADIOTHERAPY ALONE

(%)
SIDE EFFECTS OF RADIOTHERAPY

- MUCOSITIS/EPITHELITIS
- XEROSTOMY (IMRT)
- DECREASED Ig-A LEVEL (CARIES)
- DETERIORATION OF SENSE OF TASTE
- SOFT TISSUE/OSTEORADIONECROSIS
- INJURY OF THE SPINAL CORD