

volumes in treated volumes depended on bladder fillings. CONCLUSIONS Implementation of 3D treatment planning system in teletherapy of cervical cancer helps to avoid a geographical miss, to reduce both the treated volume and the doses delivered to organs at risk.

## 10.

### THE COMPARISON BETWEEN THE THREE – FIELD AND FOUR-FIELD TECHNIQUES OF PLANNING OF RADIOTHERAPY IN PROSTATE CANCER

P. Milecki, T. Piotrowski, M. Dymnicka, J. Malicki, G. Stryczyńska

Greatpoland Cancer Centre, Poznań, Poland

Purpose: evaluation 3-field(3F) and 4-field(4F) planning techniques for patients with localized prostate cancer. Materials/methods: Five patients with prostate cancer (T3N0M0) were evaluated. CT images were obtained at 5mm increments and were transferred to CadPlan\_planning\_workstation. The planning target volume (PTV) was defined as prostate and seminal vesicles with 15mm margins around clinical target volume (CTV) except prostate–rectum interface where 5mm margin was applied. CTV was defined as prostate and seminal vesicles. Following organs at risk (OAR) were outlined: rectum, bladder, right femoral head. Following 3F and 4F plans were performed: 3F with angles (0deg-120deg-240deg; 0deg-90deg-270deg) and 4F (0deg-90deg-180deg-270deg). We also created two versions of treatment plans including of energy; 6MV and 20MV for Clinac2300CD. Total dose was 74Gy. Mean total doses of thirty plans in irradiated organs at risk (rectum, bladder and right femoral head) were compared. For PTV mean and minimum dose were criteria for comparison of treatment plans. Results: There were no significant dose differences between evaluated plans of treatment in PTV(0.05). Because mean dose in femoral head in each treatment plan was below tolerance dose, main dose-limiting organ was rectum and bladder. Lowest mean dose 42.7 Gy in rectum was achieved by application of 3F technique of 20MV(0deg-90deg-270deg). Bladder was also spared with the same 3F technique of 20MV, where mean dose was 45.2Gy. Conclusions: This study showed that the „T” three-field technique (an anterior and two opposing lateral fields) provided with 20 MV is optimal and assures the lowest rectal dose.

## 11.

### THE ANALYSIS OF DOSES IN THE TUMOUR AND IN CRITICAL TISSUES IN THE BRACHYTHERAPY OF MALIGNANT MELANOMA LOCALISED IN EYES

J. Kierzkowski<sup>1</sup>, J. Malicki<sup>1</sup>, A. Roszak<sup>2</sup>

<sup>1</sup>Medical Physics Department and <sup>2</sup>Brachytherapy Ward, Greatpoland Cancer Centre, Garbary 15 Street, 61-866 Poznań, Poland.

Brachytherapy is known and used procedure in the treatment of tumours localised in eyes, especially recommended when avoiding of enucleation accompany the long term cure.

**Aim:** The aim of this paper was to compare the doses delivered to the tumour and critical tissues during the treatment of the group of patients treated with Ru-106 applicator.

**Patients:** Between 1994 and 2000, 67 patients (dgn. melanoma malignum in eye) underwent brachytherapy. At 51 patients the tumour was localized in the back of eye, at 15 equatorially and at one in the front section of the eyeball. The median of the patients' age was 56.3 years. The CCB type applicator was applied for 56 patients, the COB for 7 and the ROA for 4 patients.

**Method: Irradiation** - Prescribed dose of 60 Gy was normalized to the top of the tumour, it decreased by 50%—10% per millimetre with the distance from applicator. The isotope producer determined the dose-rate accuracy for +/-30%. This caused that therapeutic dose had to be calculated taking account for the minimal dose-rate, while the doses in critical organs for maximal dose-rate possible.

**Analysis:** All patients were divided into three subgroups: 8 patients into 1<sup>st</sup>, 19 into 2<sup>nd</sup> and 40 into 3<sup>rd</sup>. The inclusion criterion was size of tumour: up to 3 mm of height (1<sup>st</sup> group), 3-5 mm (2<sup>nd</sup>), and larger than 5 mm (3<sup>rd</sup>) respectively.

**Results:** Table presents mean doses in the tumour, sclera and lens (calculated at it's middle) for each group of patients.

Tumour size [mm]	Doses [Gy]		
	Tumour	Sclera	lens
< 3	102.9	162.4	137.6
3 – 5	186.2	463.5	396.2
> 5	268.2	974.9	840.6

**Conclusions:** Mean doses in tumour varied from 102.9 Gy to 268.2 Gy depending on the tumour size. Doses in sclera and lens did not exceed the tolerance levels in all three groups of patients.

## 12.

### THE EVALUATION OF CLINICAL, HISTOLOGICAL AND MOLECULAR PREDICTIVE AND PROGNOSTIC FACTORS IN PATIENTS WITH ADVANCED SQUAMOUS CELL CANCER OF THE LARYNX, MESO- AND HYPOPHARYNX, FLOOR OF MOUTH IRRADIATED AFTER INDUCTION CHEMOTHERAPY

K. Małecki

Centrum Onkologii, Klinika Radioterapii Kraków, Polska

Between 1988-1997 198 patients with HNSCC received induction chemotherapy. Clinical staging was as follows II-7(52%), III-45(20%), IV-146(64%). Patients received 1 to 4 cycles of Cisplatin + 5FU. Response to chemotherapy (CR or PR) was observed only in patients who received 2-4 cycles of chemotherapy. The best responses were observed in patients with laryngeal, mesopharyngeal and hypopharyngeal cancers, 55%. Radiotherapy was subsequently performed in 178(90%). Twenty patients were not irradiated because of poor performance status or progression of disease after chemotherapy. Radical radiotherapy was performed in 124 (5-year LC 38%, DFS 35%, DSS 43%, OS 30%). All 25 patients irradiated palliatively died during 26 months. The best results were observed in patients with laryngeal cancer; LC 48%, DFS 25%, DSS 32%, OS 22%. The most frequent failure was local recurrence in 29(23%) patients. In the next step of this study we want; 1) to assess prognostic and predictive value of selected clinical, histological and molecular factors by defining its influence on the chance of response to chemotherapy and chance of cure 2) to examine the correlation between these factors and to establish if they give new predictive and prognostic information 3) to establish which of examined factors may be useful in selecting patients with advanced HNSCCs to combined modality treatment (chemotherapy + radiotherapy), and particularly

in selecting patients with advanced laryngeal cancer to larynx preservation treatment. We will examine the cell cycle parameter Ki67, expression of p53 protein and expression of (EGFr). There will be also reevaluated histological material (grading).

## 13.

### IMMUNOTHERAPY COMBINED WITH BRAIN METASTASES IRRADIATION IN MELANOMA PATIENTS

S. Nawrocki, A. Karczewska, P. Milecki, D. Iżycki, G. Stryczyńska, A. Mackiewicz

Greatpoland Cancer Centre, USOMS, Poznań, Poland

**Aims:** To assess toxicity and results of melanoma brain metastases irradiation in patients treated with genetically modified tumour vaccine.

**Materials/methods:** A group of 45 melanoma stage IV (AJCC) patients was treated with vaccine consisted of autologous melanoma cells admixed with allogeneic cells modified with IL-6 and sIL-6R genes. During the treatment 14 patients developed symptoms of brain metastases. 5 patients had solitary metastases, 9 multiple lesions. 4 patients with single metastasis were treated surgically. All 14 patients were irradiated with the doses 30-39 Gy, using 3 Gy/fraction, 5 fractions/week. Toxicity of cranial irradiation (clinically, CT) and clinical results (CT, survival) were evaluated. Immunological cellular responses were assessed in vitro.

**Results:** Acute effects of irradiation were tolerable and manageable using standard dexamethasone treatment. There was no radiation encephalopathy or radiation necrosis. In 7/14 patients stabilization or partial remission of brain lesions was observed. Overall survival measured from brain metastases diagnosis ranged from 2 to 21 months (2 patients are still alive), median survival was 316 days. In 4 treated patients radiation enhanced immune responses to the vaccine.

**Conclusions:** Palliative cranial irradiation is well tolerated by patients treated with novel systemic approaches such as immunogene therapy, relieves symptoms and may extend survival. Radiation of metastases modulates immune responses to melanoma cells.