Conclusion: This preliminary study illustrates that selective PORT with tailored target volumes can be offered to patients after adequate curative surgery. It resulted in low geographical miss and was associated with a substantial reduction of the controlateral parotid dose.

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Human Papillomavirus (HPV) status in advanced cervical cancer: predictive and prognostic significance for curative radiation treatment

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Purpose: HPV infection plays a major role in oncogenesis of squamous cell carcinoma of the cervix. This study was performed to investigate if HPV status and E2 gene integrity are prognostic parameters for clinical outcome and predictive for radiation response.

Materials and Methods: Paraffin embedded biopsies of 40 women with locally advanced cervical cancer treated with curative radiotherapy were analysed for HPV infection and E2 gene integrity by multiplex PCR. Statistical analyses were performed for overall survival (OS), disease free survival (DFS), local progression free survival (LPFS) and treatment response (clinical complete remission CCR). Tested parameters were: HPV, median hemoglobin level, nodal status, median age, FIGO stage, grade, median RT dose. Same endpoints were used in regard to analysis of the E2 gene integrity.

Results: Twenty-eight (70%) of 40 carcinomas were HPV positive. The only significant factor for a better OS, DFS and LPFS was HPV positivity ($p < 0.02$, $p = 0.02$, and $p < 0.05$, log rank, respectively). HPV positive tumors had a significant better clinical complete remission compared to the negative group (67% vs. 33%, $p = 0.04$, Fisher's exact test). Patients with an intact E2 gene region showed a trend for a better DFS ($p = 0.1$, log rank)

Conclusion: This study reveals HPV as an independent prognostic parameter for clinical outcome and as a predictive factor for radiation response. The integration of the virus genome into the host cell DNA might be a molecular target to determine treatment response of HPV positive cancers.

490 POSTER

Exploiting the advantages of real-time intraoperative ctv definition: first report of an institutional phase I-II trial of perioperative fractionated HDR brachytherapy (PHDRB)

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Background: To determine the feasibility of a 4Gy bid PHDRB regimen. Protocol characteristics included: 1) implantation of catheters during open surgery; 2) CT-based dosimetry following the rules of the Paris system with manual optimization, 3) PHDRB dose assignment according to the quality of the surgical resection (R0 vs. R1 vs. R2) as described in the final pathology report.

Material and Methods: 111 patients have been included during the study period 2000-2003. Main groups were head and neck 41, sarcomas 34, gynecologic 15, colorectal 9 and other 12. Resection type was categorized as R0, R1 and R2 in 21, 88 and 2 patients, respectively. R1 resections were close in 45 patients (average margin distance of 3.2mm) and microscopically positive in 43 patients.

29 previously irradiated patients were treated with surgical resection + PHDRB. No further external beam radiation (EBRT) was given. The brachytherapy dose was 4 Gy bid x 8 (32 Gy total dose) for R0 resections, 4 Gy bid x 10 (40 Gy total dose) for R1 resections and 4 Gy bid x 12 (48 Gy total dose) for R2 resections. 82 unirradiated patients (54 with primary disease, 28 with recurrent disease after surgery) patients were treated with surgical resection + PHDRB + EBRT. Brachytherapy dose was 4 Gy bid x 4 (16 Gy total dose) for R0 resections, 4 Gy bid x 6 (24 Gy total dose) for R1 resections and 4 Gy bid x 8 (32 Gy total dose) for R2 resections. Radiation treatment was completed with EBRT to 45 Gy in 25 treatments, 1.8Gy/day, 4 to 5 weeks after surgery (concomitant chemotherapy was added according to the specific disease site protocol).

Results: 108 out of 111 patients (97.3%) could be treated with the PHDRB implant as prescribed. In the remaining three patients, the catheters had to be removed before the end of the PHDRB course due to infection in two and displacement in one.

RTOG grade 1-2 and 3-5 complications that may be attributable to the use of PHDRB were seen in 2 and 14 patients, respectively. Out of the grade 3-5 complications, three were implant-related (bleeding upon removal in 1, need for catheter relocation in 2) and 11 radiation-related (neuropathy in 2, soft tissue necrosis in 4, pelvic bleeding in 4, ENT bleeding in 1). Five of the six patients who may have died as a consequence of PHDRB, 5 had recurrent disease, four after prior radiation.

Three-year local control was 89%, 98% in unirradiated patients and 58% in previously irradiated patients ($p=0.0001$). Regional control was 76%, 84% in unirradiated patients and 53% in previously irradiated patients ($p=0.0043$). Freedom from distant failure was 66%, 72% in unirradiated patients and 46% in previously irradiated patients ($p=0.0039$). Three-year local control was 100% for R0 resections and 87% for R1 resections ($p=0.16$).

Conclusions PHDRB can be safely used after surgical resection. Three-year local control rates are excellent even after R1 resections, both in unirradiated and previously irradiated patients.

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Location of cervical lymph node metastases in oropharyngeal and hypopharyngeal carcinoma: implications for cranial irradiation field borders.

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Background: The objective of this study was to analyse the exact location of the most cranial metastatic cervical lymph node in patients with oropharyngeal or hypopharyngeal carcinoma. This was done in order to specify the cranial border of the irradiation field for improvement of parotid sparing irradiation.

Material and methods: The most cranial metastatic lymph node, ipsilateral and when present contralateral, was delineated on 58 diagnostic CT scans of patients with node positive oropharyngeal or hypopharyngeal carcinoma. The delineation was done in a truly three-dimensional fashion, using in-house developed software. The distances from the external border of the delineated lymph node to the base of the skull were measured in all planes.

Results: Forty patients with oropharyngeal and 18 patients with hypopharyngeal carcinoma were studied. In total 58 ipsilateral and 27 contralateral cervical lymph nodes were delineated. The mean distance to the base of the skull in the coronal plane was 25.6mm (range 2.6-73.8mm; SD 14.7) and 34.7mm (range 10.4-78.9mm; SD 14.0), ipsilateral and contralateral respectively ($p=0.002$). None of the patients with already advanced neck disease had the top of the highest contralateral metastatic lymph node within a distance of less than 10mm from the base of the skull, 5% less than 20mm, and 17% less than 30mm. This in contrast with the top of the ipsilateral metastatic lymph nodes, of which 15% had a distance of less than 10mm from the base of the skull, and 41% less than 20mm. No correlation was found between the location of the delineated lymph node and its volume, tumor type, T status, N status, or gender.

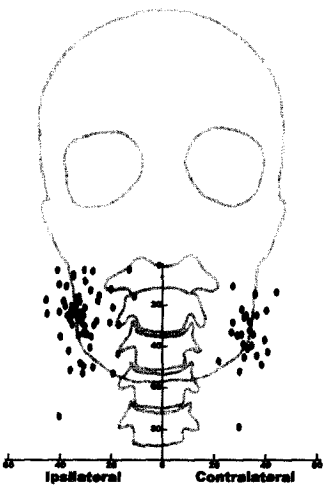

Figure 1. Schematic presentation of the most cranial metastatic lymph nodes. The crossing points of the cranial and the medial outer border of the metastatic lymph nodes are presented as a black dot. A division has been made between the ipsilateral and contralateral nodes. Distances are given in millimetres.