

more than 3.5 cm and not susceptible to radiosurgery. Patients were classified belonging to RPA classe I and II (7, 17 respectively). Treatment was conducted by using linac-based stereotactic system in 16 patients and Cyberknife system in 8 patients. The frameless image-guided radiosurgery system named Cyberknife uses the coupling of orthogonal pair of x-ray cameras to a dynamically manipulated robot-mounted linear accelerator possessing six degrees of freedom, which guides the therapy beam to the target without the use of frame-based fixation. The accuracy of the whole system is below 1 mm: the reproducibility of treatment plans during the different sessions is guaranteed. For all treatments the median dose was 24 Gy in 3 fractions (reference isodose 80%). Whole-brain irradiation was not applied as an initial treatment.

Results: Stable disease was defined as unchanged tumor volume at the time of radiologic follow-up (mean 2.5 months), including patients with total or partial regression of tumor size: local control was obtained in 19 (86%) patients. Only 3 patients (13%) had new metastases developed in areas not covered by stereotactic irradiation. The majority of the patients (87%) died due to progression of their extracranial disease and only 13% died as a result of brain metastases. Treatment-related complications were observed in 2 patients in the early period (<3 months). Neurological improvement was observed in 8 patients (35%).

Conclusions: Hypofractionated conformal stereotactic radiotherapy is an effective noninvasive technique for treatment of single or oligo brain metastases. Results concerning local control seem to be comparable to those of single fraction radiosurgery. Because in the vast majority of cases HCSRT is a palliative treatment, survival is determined mainly by the systemic disease. The omission of WBRT may increase the risk of developing new brain metastases outside the irradiated area but salvage therapy is available in case of relapse. Acute and late complications with this strategy are in the range of what has been reported previously for HCSRT and single fraction radiosurgery.

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POSTER

Verification of the therapeutic stereotactic irradiation (STI) dose for early lung cancer

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Stereotactic irradiation (STI) therapy has recently been reported to be effective for early lung cancer and possible to be decreased in harmful side effects. This treatment included a high dose per fraction (12 to 15 Gy) with hypofractionation compared to a dose of conventional irradiation (2 Gy). If the dose-precision of STI for lung cancer was not corrected, the treatment possibly resulted in the decline in the therapeutic effect and the increase in a harmful matter. The lung is a hypodensity structure consists of the air and the irregular alveolar organization. It is very difficult to calculate the correct therapeutic dose in STI therapy using non-coplanar, irregular fields and multi-direction. So, we originally produced an irregular density phantom which was on-line taken in the treatment planning system as computed tomographic images. Then, the plan was rewritten and recalculated on the phantom, and we compared the calculated doses with the exposed doses. We start the STI treatment, when the discrepancy is within plus/minus 3%. In conclusion, our STI treatment for early lung cancer has been performed in a high precision with a new original phantom.

Surgery

Oral presentations (Mon, 31 Oct, 9.15–11.15)

Surgery

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ORAL

Local recurrences in the TME trial: can we reduce the radiotherapy field?

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Introduction: The number of local recurrences (LR) in rectal cancer has significantly reduced with the introduction of preoperative (chemo) radiotherapy. As known from the literature, reduction of the irradiated volume will diminish both early and late toxicity. This study was undertaken to evaluate where local recurrences occur and whether the upper border of the treatment fields can be adjusted to the level of S1/S2.

Methods: All LR occurring in the Dutch TME trial patients were studied to determine their exact localisation. CT or MRI scans of LR were reviewed by three observers in consensus and the upper border of the recurrent tumour was determined in 70 patients so far. If the LR originated below the level of S2, adjustment of the cranial border of the treatment field was considered possible.

Results: In total 118 LR occurred; 78 recurrences were confirmed at cytology or histology and in 36 patients, the diagnosis of LR was based on imaging only. The distance of the primary tumour to the anal verge was <5 cm in 42%, 5–10 cm in 42% and >10 cm in 16% of the patients. Primary tumours were TNM stage I in 5%, TNM stage II in 20% and TNM stage III in 64%.

Six percent (4/70) of the recurrences had an upper border at the level of S1/S2, and 13% (9/70) was at the level of S2/S3 and 81% was located at a lower level. LR with the upper border above the level of S3 had their primary tumour in the upper part of the rectum (>10 cm, n=3), but also in the midrectum (5–10 cm, n=4) and in the lower rectum (<5 cm, n=6). In 5/11 patients, the cranial border of the treatment field could have been lowered, because the LR occurred over the whole presacral area and probably originated from a lower level. Of the six remaining patients, 3 were irradiated and had apparently an in-field recurrence.

Conclusions: Eighty-one percent of the LR occurred under the level of S2, and in 91% the upper border could have been lowered to the level of S1/S2. Initial tumour height is not strictly correlated with the localisation of the recurrent tumour and cannot be used to select patients at risk for a high located recurrence. Therefore, lowering the upper border of the RT field is questionable.

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ORAL

Continence and quality of life after salvage techniques to avoid colostomy: coloanal anastomosis versus perineal colostomy, in cases of very low rectal cancer

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Background: In cases of very low rectal carcinoma, 2 major techniques have been proposed to avoid abdominal colostomy: coloanal anastomosis (CAA) or a perineal reconstruction after abdominoperineal resection (APR). In our institution the perineal reconstruction technique adopted was the perineal colostomy (PC) with an auto-transplant of a free flap of colonic muscle around the colon a few centimeters upstream of the perineal stoma. The aim of this study was to compare the functional results and the quality of life (QoL) of these two salvage techniques.

Patients and methods: 50 patients were operated on from 1991 to 2002 for rectal adenocarcinoma and analyzed: they had a follow-up of more than one year, and neither relapse nor treatment. A group of 38 patients had a CAA, including: J pouch (n=10), coloplasty (n=2) and intersphincteric resection (n=3). The two groups, CAA versus PC, were comparable for: mean age 61(44–76) versus 56(37–75), preoperative radiotherapy 84% versus 75%, T3 tumor stage 52% versus 50% and T4 0% versus 0%.

Results: The global Vaizey score was equivalent for the two groups, CAA 12(0–22) versus PC 11 (8–13). The only differences reported were more

frequent fractionated stools for the CAA group and soiled pads for the CP group. The scores evaluating the QoL general aspects (QLQC-30) were equivalent for CAA and PC. The specific score of QoL for rectal cancer was equivalent for the majority of aspects with only one worst QoL, for the defecation for the CAA group 76 (24–100) versus PC group 90 (61–95).

Conclusions: These two salvage techniques give some very comparable results for the continence score and for the QoL. In case of very low rectal tumor, the choice between an intersphincteric resection, that gives the worst functional result of all CAA, and APR with a PC must be done more according to carcinologic(al) criteria than future functional or QoL results, since no major differences seemed to exist between these two salvage techniques.

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ORAL

Could surgical radiofrequency ablation of colorectal metastases stimulate dormant micrometastases?

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Background: After hepatectomy, quiescent hepatocytes replicate to restore the liver homeostasis. This process is also known to boost the growth rate of micrometastases sleeping in the remnant liver. Radiofrequency ablation (RFA) destroys mainly tumoral tissue with a small surrounding healthy liver margin. The aim of this study was to evaluate the serum pattern of cytokines involved in hepatic growth regulation after surgical RFA of colorectal metastases in order to evaluate the general inflammatory stress as well as the possible stimulation of dormant micrometastases.

Patients and Methods: Metastases of ten non consecutive patients were intraoperatively destroyed by RFA (Elektrotom®) without concomitant resection. A Pringle manoeuvre was performed in case of lesion more than 30 mm in size or in a paravascular location. Serum sampling were done at D-1, D0 +3 hrs, D1, D2, D3, D5, D7. IL6, TNF α , HGF, VEGF, bFGF, TGF β 1, CRP were assessed by ELISA technique. Livers sizes were measured pre and postoperatively.

Results: IL6 level reached a peak at 3 hours and stayed high during all the study at the opposite of TNF α which was undetectable as bFGF. HGF increased three times at D1 and then decreased until D7 where it was still twice its baseline level. VEGF level increased at D5. CRP was at a high level during all the study. Postoperative CT scan did not exhibit significant increase in liver sizes compared to preoperative assessment.

Conclusion: RFA induces a lower level of systemic inflammation than cryotherapy does. RFA does not lead to a clinically observable change in the liver volume. Nevertheless, it could not be eliminated that the changes in cytokines pattern should stimulate dormant metastases at the same level of risk than resection.

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ORAL

The trans-metastasis hepatectomy (with metastases preliminary ablated with radiofrequency): results of a 13-case study of colorectal cancer

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Background: Transmetastasis curative liver resection immediately following radiofrequency (RF) destruction is a new technique which allows to propose a curative approach to patients with bilateral unresectable liver metastases (LM), when the only possible future resection plane of a hepatectomy would pass through a LM unhappily sited in this plane. This technique consists in first ablating, using RF, the ill-sited LM, located in the plane of the future section line of hepatectomy, the only possible one for volumetric reason, and then performing the hepatectomy passing through this preliminary ablated LM.

Aim: The aim of this study is to report the feasibility and efficiency of this new approach, called Post-RF-Trans-Metastasis-Hepatectomy (PRFTMH).

Material and methods: Thirteen patients were treated with PRFTMPH between January 2000 and May 2004. Of them had a colorectal primary tumor. The mean number of LM per patient was 10.7. Preoperative hypertrophy of the future remaining liver was obtained by selective portal vein embolization in 8 patients.

Results: Mortality was 7.6% (one death), and morbidity was 24%. No local recurrence on the site of PRFTMPH was observed after a median follow-up of 19.4 months (range: 47–10), demonstrating the efficacy of this technique. All these patients except those who died postoperatively, are currently alive, and the median survival rate has not been reached yet, but is far greater than 20 months.

Conclusion: The PRFTMH is a new and safe technique, combining RF ablation and trans-RF-hepatectomy, which allows to propose a curative approach to some patients with non resectable bilateral LM. More numerous patients are required before to conclude on the positive impact of this new technique.

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ORAL

Sensitivity variations related to intercostobrachial nerve section during axillary surgery for the breast cancer

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Introduction: The complications of the surgery of axilla (e.g. pain, seroma formation, reduced arm function, anesthesia, hypo- and paresthesia in the axilla, numbness of the arm) appear due to section of the sensory intercostobrachial nerve (IBN), which is often sacrificed during an axillary clearance. This nerve damage may be a cause of significant discomfort in patients treated surgically for the carcinoma of the breast. The aim of this prospective study was to evaluate the advantage of preservation of IBN in order to diminish sensory symptoms.

Materials & Methods: The group of ninety-four patients undergoing axillary dissection for the carcinoma of the breast, hospitalised and operated at the Department of Surgery of Institute of Oncology and Radiology of Serbia (National Cancer Research Center) in Belgrade, in the period from April 2001-August 2002, was recruited to this study, and followed prospectively for the period of three months. According to the surgical interventions of IBN, we divided the patients into three different groups: in first group, the nerve is preserved; in second, the main trunk is preserved and peripheral branches are divided; in third group, the nerve is sectioned. Clinical testing to evaluate changes in tactile sensitivity and pain, using standard neurological methods, were conducted during the immediate postoperative period (4–7 days), after one month and after three months from the surgery. We used different statistical methods: chi-square test, factorial analysis and the means of percentage in order to evaluate these results.

Results: In this group of ninety-four patients, IBN has been preserved in 35 cases, while in 20 patients only peripheral branches have been sacrificed and in 39 of them, nerve has been sectioned. We found the greatest changes in sensitivity in the group of patients with the section of nerve trunk. In the group with section of peripheral branches of the nerve, we found the less intensive alterations. The minimal presence of pain, numbness and paresthesia, although also being presented, has been reported in the group with the preservation of the nerve. The incidence, intensity and the lasting of these changes, significantly increase with sacrifice of IBN ($p < 0.001$ by the chi-square test).

Conclusions: The IBN can usually be identified during an axillary clearance and preservation of this nerve does not appear to affect local recurrence. The preservation of IBN during the axillary surgery for the carcinoma of the breast, is strongly recommended in cases where the nerve is not involved by lymph nodes, and where this preservation does not compromise a control of the disease from oncological point of view.

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ORAL

Stage migration in breast cancer after the introduction of The Sentinel Node Biopsy Technique – a population based study from the Danish Breast Cancer Cooperative Group (DBCG)

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Background: The sentinel lymph node biopsy technique (SLNB) has rapidly become the standard method in breast cancer patients for detecting metastasis to the axilla. With the technique serial sectioning and staining with immunohistochemistry in the examination of the sentinel lymph nodes suggests that 10–20% more patients have metastasis to ipsilateral axillary nodes.

Aim: The aim was to investigate if the introduction of SLNB increased the numbers of node positive patients in a population based study.

Methods: We compared a period before SLNB was introduced with a period after the method has become standard procedure in staging the