highlighted the need to monitor individual patient deformation during the treatment course. This application of SPC showed that EWMA charts can efficiently detect small shifts early on in the treatment, which would enable a timely decision for plan adaptation if necessary. 

Conclusions: SPC is a very effective tool for reviewing and monitoring the accuracy of patient positioning.

Symposium with Proffered Papers: Re-irradiation: Challenges and clinical evidence

SP-0331
Radiobiological basis of retreatment
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Experimental studies on the retreatment tolerance of previously irradiated tissues have generally been performed in the 1980’s and 90’s, and were mostly limited in scope. Generally, the retreatment tolerance of different tissues and organs differ for early and late responding tissues.

Early responding tissues are characterized by rapid proliferation and a clearly defined stem cell compartment (epidermis, mucosal lining of GI-tract) with the timing of response related to the turnover times of stem cells. Except after very severe early reactions these tissues show a complete restitution of tolerance.

Late tissue reactions in slowly or non-proliferating tissues show a much more limited long term recovery which is also dependent on the dose of the initial treatment. An example of such a tissue is the lung, contrasting with the kidney that does not show any recovery at all.

A paradoxical exception is the central nervous system, which based on its proliferation characteristics is not expected to show any significant recovery. However, extensive studies in several institutions have shown that the spinal cord shows almost complete recovery when the initial dose is approximately 50-75% of full tolerance.

SP-0332
Clinical evidence after re-irradiation using brachytherapy: review of clinical data
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Purpose: Despite aggressive multimodality treatment protocols used in first-line treatment, a significant proportion of patients with different cancer develop locoregional recurrences in previously irradiated area, typically during the first years of follow-up. Compared to salvage external-beam radiation therapy the salvage interstitial brachytherapy offers clearly better possibility to give high doses without inevitably leading to high complication rates.

Methods and results: The author analyses and review the role of salvage brachytherapy in previously irradiated patients with breast cancer, prostate cancer, head-and-neck malignancies, Gym tumors, cancer of anorectal region and other tumors.

An overview of selected results of modern image-guided salvage brachytherapy will be given. The analysis makes evident, that re-irradiation with doses in the range of 55-60 Gy (after previous irradiation up to doses of 60-70 Gy) represents very narrow tightrope walk between realistic tumor control probability and an unacceptable incidence of serious side effects. However, a reasonable number of these patients, if selected carefully, may have a chance for long-term disease control. The observed local control rates of salvage brachytherapy for previously irradiated recurrent head and neck cancer vary very widely between 16% and 86% after 2 to 5 years, for previously irradiated recurrent prostate cancer between 30% and 90%, for previously irradiated recurrent breast cancer about 95%, et cetera. The salvage external beam radiation therapy is in these indications mostly not possible and compared with the results of salvage surgery the salvage brachytherapy seems to offer lower toxicities in all indications.

Conclusion: Salvage interstitial brachytherapy in selected patients with locoregional recurrences in previously irradiated area is for a whole range of tumors proven, safe and effective treatment method with very good long-term data and with minimal toxicity.

SP-0333
Clinical evidence after brachytherapy re-irradiation - head and neck cancer
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Purpose: Re-irradiation of the recurrences in the areas of head and neck (h/n) and upper respiratory tract should always be considered as a risky treatment. These cancers quite often need to be radiate the second time because of their relapse and clinical advancement in the primary examination. High dose rate brachytherapy (HDR-BT) is very useful in short time tumor dose delivering when external beam radiotherapy (EBRT) is not possible to depot once more after previous treatment failure. Pulsed dose rate brachytherapy (PDR-BT) is safe but longer method of salvages and according to differences in recovery times allows better sparing healthy tissue during second radiation treatment. The aim of this work was to analyze the results and complications rates of another radiation treatment patients with recurrent tumors in head and neck and upper respiratory tract.

Material and methods: 47 patients with h/n and 22 with larynx/trachea (l/t) recurrent cancers were enrolled to the study. The mean time of the recurrence after diagnosing of the disease and first treatment was 9,7 months. 50 patients were treated by the HDR brachytherapy (5 doses of 4 Gy) and 19 by PDR-BT with total dose ranged between 20-40 Gy (0,8 Gy per pulse) with one or two stage treatments (respectively 9 and 4 doses). HDR-BT and PDR-BT were performed with a remote afterloading microSelectron unit (192Ir source) after planning procedure (Oncentra system). Mean age of patients undergoing observation was 50,1 years.

In three l/t patients, BT procedures were performed in combination with simultaneous chemotherapy. In 16 patients cytoreduction of the tumor preceded interstitial, surgical catheter placement. Local control, survival rates and tolerance of the treatment were discussed.

Results: The remission after 1,3,6 months after treatment and early complication were assessed. In 15% patients complete remission (CR), in 65,9% partial remission (PR) and 10,6 % no response for brachytherapy (NR) were stated; in the other (8,5%) patients there were progression (P) of the tumor. Percentages of remission after 3 and 6 months were: CR - 10,6 % and 6,4%, PR - 53,2% and 36,2%, NR and P - 36,2% and 57,4%, respectively. For the l/t group complete and partial remissions in 6 months treatment time were achieved in 20% patients, survival rate 24 months after BT were estimated for 22%. Progression of the disease was noted in 60% of cases. The most common side effect was superficial.