and number of fractions always increases efficiency. In order to maximize the logistic benefits of HDR-BRT while improving patient compliance and resource sparing, various fractionation regimens are used. Fractionation and dose adjustments of the total dose are radiobiologically important factors in lowering the incidence of complications without compromising the treatment results.

Aim: To compare patient outcomes and complications using two linear-quadratic model-based fractionation schemes of high-dose-rate intracavitary brachytherapy (HDR-IC) used to treat cervical cancer.

Materials and Methods: A prospective randomized study on 318 patients, with histologically proven advanced cervical cancer (stages III-B-IIIIB) was enrolled in the study. All patients received External Beam Radio Therapy (EBRT) 50 Gy in 25 fractions with concurrent chemotherapy (cisplatin 35 mg/m²) followed by IntraCavitary brachytherapy using high dose rate equipment. Patients were randomised after completion of EBRT into two arms: (1) Arm 1: HDR ICRT 6.5 Gy per fraction for 3 fractions,a week apart. (2) Arm 2: HDR ICRT, 9 Gy per fraction for 2 fractions, 1 week apart. On completion of treatment, patients were assessed monthly for 3 months followed by 3 monthly thereafter. Treatment response was assessed according to WHO criteria after one month of completion of radiotherapy. The RTOG criteria were used for radiation induced toxicities. We analyzed late toxicities in terms of Rectal, Bladder, Small Bowel toxicity and Vaginal Stenosis.

Results: Acute reactions in both the groups were comparable. None of the patient developed Grade 4 toxicity in our study and no toxicity related mortality was encountered. A slightly high frequency of late toxicity was observed in 9Gy Arm patients but was not statistically significant.

Conclusion: In our setup, HDR brachytherapy at 9 Gy per fraction in two fractions is safe, effective and resource saving method with good local control, survival, and manageable normal tissue toxicity.

Cervix: Oral Abstract

Identification of T- and B-cell epitopes in HPV-16 E7 gene isolated from cervical cancer patients

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Introduction: In India, cervical cancer is the most common cancer among females. Persistence infection with high risk human papillomaviruses (HR-HPV) is a viral oncoviral agent for cervical cancer development, especially HPV-16 is found to be exclusively high in cervical cancer cases in Indian population. The continuous expression and transforming ability of HPV E7 helps in progression of cervical cancer and other HPV related disease, which make E7 as a suitable targets for the development of therapeutic vaccines.

Objectives: Identification of T- & B-cell epitopes HPV-16 E7 gene isolated from cervical cancer patients.

Materials and Methods: A total of 80 cervical cancer tissue biopsies were collected and processed for DNA extraction, HPV diagnosis and genotyping. E7 gene of HPV-16 positive samples were amplified and sequenced. Epitopes in E7 gene sequence were predicted by online freely available tools. The median duration of follow-up was 25 months. Local control was achieved in 28 patients with residual disease in 7 patients and local recurrence in 2 patients. 10 patients had acute lower GI toxicity {Grade 1 (n=6), Grade 2 (n=4)}, 2 patients had acute Grade 1 bladder toxicity. 1 patient had grade 3 and 1 patient had grade 4 chronic bladder toxicity. Chronic rectal toxicity was seen in 10 patients {Grade 2 (n=4), Grade 3 (n=4), Grade 4 (n=2)}.

Result: Local control was achieved in 28/37 patients (75.6%) and overall survival rate of 81.1% at median follow up of 25 months in patients with locally advanced carcinoma cervix and unfavorable prognostic factors.

Cervix: Oral Abstract

Role of interstitial brachytherapy using template (mupit) in locally advanced carcinoma cervix

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Introduction: Locally advanced carcinoma cervix includes stages III-B, IIIA, IIIB and IVA. Interstitial brachytherapy has the potential to deliver adequate dose to lateral parametrium and to vagina. Hence, it is preferable in cases with distorted anatomy, extensive (lower) vaginal wall involvement, bulky residual disease post EBRT and parametrium involvement upto lateral pelvic wall.

Aim and Objective: To determine clinical outcome and complications (acute and chronic) in locally advanced cervical cervix, treated with interstitial brachytherapy using template (MUPIT - Martinez universal perineal interstitial template).

Materials and Methods: This study is a retrospective analysis of 37 cases of locally advanced cervical cancer cervix (stage IIB-3, IIIB-30, IVA-5), treated with EBRT (dose-median 4500 Gy) ± concurrent chemotherapy (CCRT) - Inj. Cisplatin/Inj Carboplatin, followed by interstitial brachytherapy using MUPIT from December 2009 to June 2015. Initial treatment with EBRT ≥ CCT was followed by interstitial brachytherapy. Under spinal anaesthesia and epidural analgesia, MUPIT application was done. Straight and divergent needles (median 26, range 19-29) were inserted to cover parametrium adequately. Needle position was verified with planning CT scan and Brachytherapy planning was done. Dose was normalized to 5 mm box surface from outermost needle with optimization of dose to OAR (Bladder, Rectum and Sigmoid colon). Prescription dose (~25 Gy in 5 #). Treatment was delivered by Microselectron HDR using Ir192 source. Treatment fractions were delivered twice daily with min 6 Hrs. gap in-between fractions.

Results: The median duration of follow-up was 25 months. Local control was achieved in 28 patients with residual disease in 7 patients and local recurrence in 2 patients. 10 patients had acute lower GI toxicity {Grade 1 (n=6), Grade 2 (n=4)}, 2 patients had acute Grade 1 bladder toxicity. 1 patient had grade 3 and 1 patient had grade 4 chronic bladder toxicity. Chronic rectal toxicity was seen in 10 patients {Grade 2 (n=4), Grade 3 (n=4), Grade 4 (n=2)}.

Conclusion: Local control was achieved in 28/37 patients (75.6%) and overall survival rate of 81.1% at median follow up of 25 months in patients with locally advanced carcinoma cervix and unfavorable prognostic factors.

Cervix: Oral Abstract

Pattern of distant metastases in treated cases of carcinoma cervix : An analysis

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Aim: To analyze pattern of distant failure, site of metastases, number of metastases and duration in patients with carcinoma of cervix treated with concomitant chemoradiation.

Materials and Methods: This study is a retrospective analysis of 37 cases of carcinoma cervix who treated with radical treatment (concomitant chemoradiation) following 3 session of HDR brachytherapy) with distant metastases presented at Department of Radiotherapy-II, Pt BDS PGIMS, Rohtak were evaluated retrospectively.

Results: Most of the female with metastases were in age group of 50-59 years (82%), 12% were in age group >60 and 6% were in <50 age group. Major site of stage presentation was 40% (29/73), 48% (35/73) and 12% (9/73) in stage II, 11% and IVA respectively. Of which 93% had squamous cell carcinoma histology and % were having adenocarcinoma at time of presentation. Among them 34% (17/20) had solitary metastases, 19/73 (26%) had two metastatic sites and 5/73 (7%) had multiple metastatic sites. Most common site of distant metastases was paraaortic lymphnodes in 40% of cases, followed by liver, lungs, brain, cervical lymph nodes and one case of cutaneous metastases was also seen. Paraaoortic lymphnodes, liver and lung metastases