

present in maximum number of patient with multiple metastases. Salvage chemotherapy given in 51 cases, palliative radiotherapy (30 Gy or 20 Gy) in 37 cases whereas in 5% of cases single session with 8 Gy was given.

**Conclusion:** A regular and long term follow up of patients with carcinoma of cervix is necessary to detect distant metastases. With early and proper diagnosis and treatment a better outcome could be achieved.

## Cervix: Poster Abstract

### Low dose radiation and chemotherapy significantly reduces hypoxic cell population in locally advanced cervix cancer- results of a phase II study

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**Introduction:** Tumor hypoxia is one of the major causes of high incidence of treatment failures to chemoradiation which is the standard of care in locally advanced cervical cancer. The necessity of newer treatment options that can circumvent hypoxia is highly relevant in this group. Use of low dose radiation to enhance the efficacy of cell cycle specific chemotherapy by mechanism of chemopotentialization is one of the elegant approaches reported in the literature. We have already published the feasibility, efficacy and tolerance of low dose radiation and chemotherapy in neoadjuvant setting in cervical cancer. In this report we evaluated the role of this novel treatment regimen in reducing the hypoxic tumor cell population in cervical cancer.

**Methods:** Total 24 patients with stage IIB-IIIb squamous cell carcinoma cervix were treated with initial 2 cycles of paclitaxel and carboplatin and concurrent low dose radiotherapy prior to standard chemoradiation. Response was assessed clinically, radiologically (by MRI) and pathologically (four quadrant representative punch biopsy from the cervix) after 3 weeks of neoadjuvant treatment prior to chemoradiation. Immunohistochemistry of HIF-1 $\alpha$  was done in the biopsy samples to determine the proportion, intensity and scoring of hypoxic cells.

**Results:** The proportion of positivity of base line HIF-1 $\alpha$  was 42% (10 out of 24 patients). Low, moderate and high expressions were seen in 8%, 17% and 17% respectively. We observed nuclear positivity in 20%, and fine granular perinuclear cytoplasmic positivity in 80% cases. We failed to observe any association between expressions of HIF 1 $\alpha$  in relation to the distance from blood vessels in tumor cord. The average age of patients in hypoxia positive and negative groups were 51.7 vs 48.36 yrs ( $p > 0.05$ ). There was no difference of mean hemoglobin level (11.3 to 11.1,  $p > 0.05$ ) or MRI based tumor volume at baseline (57.1 vs. 52.4,  $p > 0.05$ ) in HIF 1 $\alpha$  positive and negative groups respectively. Low dose radiation and chemotherapy significantly reduced the tumor volume in bulky hypoxic tumors. The tumor volume reduction rate (TVRR) was significantly higher in hypoxic group (TVRR<sub>HIF\_neg</sub> vs. TVRR<sub>HIF\_pos</sub> 68.9 vs. 86.3,  $p = 0.02$ , t-test). There was significant improvement of diffusion MRI derived apparent diffusion coefficient (ADC) in hypoxic tumors with low dose radiation and chemotherapy (0.75 vs. 1.27,  $p = 0.12$ , Wilcoxon signed-rank test). Median score of percentage of hypoxic cells after neoadjuvant treatment were significantly higher in patients who developed subsequent local recurrence than the rest of the group (77% vs. 5%  $p = 0.009$ , Mann Whitney U test).

**Conclusion:** Overall all HIF 1 positivity was 42% in the present study. A predominantly perinuclear pattern of HIF 1 staining was found in cervix cancer. Low dose radiation and chemotherapy significantly reduced the hypoxic tumor bulk in cervical cancer.

## Cervix: Poster Abstract

### Incremental Role of <sup>18</sup>F-FDG PET with contrast enhanced CT (PET-CECT) in detection of recurrence of carcinoma cervix

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**Purpose:** To evaluate the role of <sup>18</sup>F-FDG PET with contrast enhanced CT (PET-CECT) in early detection of recurrence in follow up patients of carcinoma cervix.

**Methods:** Patients with histopathologically proven carcinoma cervix who underwent chemotherapy, radiotherapy and/or surgery and on follow up

were recruited in the study. Fifty-two patients underwent <sup>18</sup>F-FDG PET-CECT for detection of recurrence. The median age was 51.5 (average = 53.4) years. PET-CECT studies were evaluated and analyzed separately by an experienced nuclear medicine physician and a radiologist independently. The physicians were blinded for the patient history. PET-CECT results were validated with histopathological correlation, conventional radiologic imaging/follow up PET-CECT study and clinical follow up.

**Results:** Out of 52 patients, 34 patients were reported as positive for recurrence, 17 of these were having active local recurrence and 31 patients had regional lymph nodal metastases, 14 patients had distant metastases (out of them 6 patients had distant lymph node metastases, 6 had pulmonary metastases, 4 had skeletal metastases and two had liver metastases). Remaining 18 patients were reported as negative for recurrence. The lung was the most common site for distant metastasis. Patient were then further evaluated based on histopathological correlation, conventional radiologic imaging and follow up PET-CECT scan and five were found to be false positive and one patient was identified as false negative. The sensitivity, specificity, positive and negative predictive value were derived to be 96.7%, 77.3%, 85.3% and 94.4%, respectively. Accuracy was calculated to be 88.5%.

**Conclusions:** <sup>18</sup>F-FDG PET-CECT is a very useful non-invasive modality for the early detection of recurrence and metastatic workup in patients with carcinoma cervix with a very high sensitivity and negative predictive value. It is also useful in targeting biopsy sites in suspected cases of recurrence.

## Cervix: Oral Abstract

### Evaluation of adequacy of conventional radiotherapy fields based on bony landmarks in cervical cancer patients using contrast enhanced CT

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**Introduction:** Cervical cancer is the second leading cause of cancer death in Indian women. Although, it is known that in Western women the conventional pelvic fields based on bony landmarks provided inadequate coverage for pelvic lymph nodes in cervical cancer; it remains unclear in Indian patients because of the pelvic anatomic discrepancies. In the present study, we have tried to evaluate the adequacy of conventional pelvic fields based on bony landmarks by using CECT using pelvic vessels as surrogate of lymph nodes.

**Aims and Objectives:** To evaluate the lymph node location in CECT pelvis using vessels as surrogate markers.

- To compare the data, so obtained, with the usual radiotherapy field; where bony landmarks are used to define the field.
- To evaluate the adequacy of radiation portal defined on bony landmarks in covering pelvic lymph nodes.

**Materials and Methods:** This study was conducted in the Department of Radiotherapy and Oncology, Regional Cancer Centre, IGMC, Shimla in patients suffering from carcinoma of cervix. Two dimensional radiation portals were designed on conventional simulator "Acuity." CECT pelvis was done in the same position along with same immobilization accessories used during conventional simulation. 2 mm thick slices were taken from L1 to mid femur. Using vessels as surrogates for lymph nodes and applying Tailors guidelines, adequacy of conventional GOG field was judged.

**Results:** Most of the parameters failed in this study, signifying inadequacy of GOG defined field in Indian population, detailed results will be discussed at the time of presentation.

## Cervix: Oral Abstract

### Audit on early stage carcinoma cervix primarily treated with radical surgery: A tertiary cancer care centre experience

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**Introduction:** Clinical staging is universally accepted for ca cervix. In early

stage of carcinoma cervix both radiation and radical hysterectomy given equivalent local control rates as well as survival. Poor prognostic factors following surgery would necessitate post-operative adjuvant radiation. Selecting the patients who are unlikely to require adjuvant treatment after surgery spares them the toxicity of multiple treatment modalities, which is worse than alone.

**Aim:** To find out clinico-pathological correlation in early stage carcinoma cervix treated with the surgery.

**Materials and Methods:** It is a retrospective audit of study. All carcinoma cervix cases primarily treated with surgery.

**Results:** A total of 25 cases were treated in this study. The median age of patients observed with 48 years. The common symptoms and stage were vaginal discharge (i.e., 42.30%) and IB1 (61.53%). Most of patients were treated with type III radical hysterectomy and their clinical staging was correlated with the final histo-pathological staging. A total of 11 (i.e., 42.30%) required adjuvant treatment among them 7 (63.63%), 1 (9.09%) and 3 (27.27%) patients were in IB1 IB2 and 2A respectively. The chi-square test has been performed to compute the correlation between clinical and histo-pathological finding. It shows that significant amount of relation present between clinical and histo-pathological findings.

## Cervix: Oral Abstract

### Nation wide urgent need for colposcopy services: Cancer hospital based study

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The cancer cervix is the second most common cancer among women worldwide. About 86% of the cases occur in developing countries and this is responsible for 88% of total deaths. In India 132,000 new cases are diagnosed each year with this disease and 74,000 deaths are recorded annually which accounts for the 1/3<sup>rd</sup> of the global deaths from cervical cancer. This hospital based study is designed to look at the distribution of the disease in patients coming to the Mahavir Cancer Sansthan with the aim to achieve an early diagnosis and treatment and recognition of disease in its preinvasive state for better outcome and quality of life. The patient registry data in Mahavir Cancer Sansthan showed that the total number of patients from all cancer were 20,746 in year 2013-2014. The cervical cancer constituted 14% of the patients. 50% of the patients belong to the six district of Bihar which falls in Gangetic plain. 700 case notes have been reviewed for clinical staging at the time of the diagnosis. 71% of the patients were in stage 2b at the time of first clinical presentation, 24% in stage 3% and 4% were in stage 4. Only 1% patients were found in stage I. The colposcopy clinic data suggest only 0.04% patients have approached to us at preinvasive stage. We conclude from this study that although this hospital is mainly a referral cancer hospital 99% patient have reported to the hospital at stage 2b and beyond. Given the natural History of cervical cancer this is only the tip of iceberg. A robust system for colposcopy services needed to diagnose this disease at its preinvasive and micro invasive stage to reduce the morbidity and mortality and improvement in the quality of the life of the patients.

**Key words:** Cervical cancer; colposcopy; gangetic belt; preinvasive

## Cervix: Oral Abstract

### Comparative evaluation of concomitant chemoradiation with weekly cisplatin and gemcitabine versus weekly cisplatin in the management of locally advanced carcinoma of uterine cervix

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**Aim:** To evaluate feasibility of concomitant chemoradiation with weekly cisplatin and gemcitabine, and comparing the advantage of using this regimen over cisplatin alone in terms of disease control and toxicities in management of locally advanced carcinoma cervix.

**Materials and Methods:** The study has been conducted on fifty previously untreated, histopathologically proven FIGO stage II B - IV A patients of carcinoma cervix, attending the Department of Radiotherapy, Post Graduate Institute of Medical Sciences, Rohtak for definitive treatment by radiation therapy. The patients were divided randomly in two groups of 25 patients each. Group I received cisplatin 40 mg/m<sup>2</sup> and gemcitabine 125 mg/m<sup>2</sup> with concomitant external beam radiotherapy 50 Gy/25 fractions/5 weeks, followed by intracavitary high dose rate brachytherapy 7 Gy to point A, for 3 times, once in a week. Group II received concomitant chemotherapy with cisplatin 40 mg/m<sup>2</sup> weekly alone while radiotherapy schedule were same as in group I.

**Results:** Total treatment duration in group I and II were 9-11 and 8-10 weeks respectively. Complete response rate in group I and II were 92% and 80%. Grade III skin and mucosal reactions was 20% in group I and none in group II. Diarrhoea was 24% in group I & 8% in group II. Grade II & III leucopenia was seen in 28% and 4% cases of group I & group II respectively. Upper gastrointestinal and renal toxicities were comparable in both arms. After six month of follow up, no evidence of disease was seen in 92% and 80% cases of group I and group II.

**Conclusion:** If the toxicity is managed adequately in platinum based doublet group, it may produce improvement in response. Study is ongoing.

## Cervix: Oral Abstract

### Over view of clinical presentation, management and outcome of cervical cancer: A tertiary cancer centre experience

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**Objectives:** (a) To understand the profile of cervical cancer patients attending our hospital from January 2011 till January 2015. (b) To audit the type of care given to the patients with respect to their stage at presentation. (c) To compare the outcomes of open v/s robotic radical hysterectomy done for cervical cancer.

**Methods:** We prospectively analyzed all cases of cervical cancer from January 2011 to January 2015 presenting at our institute. Data was retrieved from patient's records and institute's tumor registry. We compared all patients undergoing open v/s robotic RH. All the data were analysed using SPSS version 21.

**Results:** A total of 562 patients were treated for cervical cancer during the time period between 2011-2015. Of these there were 316 (56%) cases taken up for surgery-212 robotic RH, 104 open radical hysterectomy and rest 246 (44%) patients received definitive CCRT. Most common age group was 40-54 yrs. IB1 stage was most common presenting stage. SCC was most common histology (75%). Immediate post op complication and oncological safety in terms of local recurrence was same in both groups. However length of stay and post operative blood requirement was significantly lower in robotic RH group. 45% of all patients who underwent surgery did not require adjuvant therapy in post op period while 35% patient required post op RT and 20% CCRT. 2.2% patient had local recurrence and most of the patients were in stage IIA1 at presentation.

**Conclusion:** Cervical cancer is the most common gynecological cancer in our hospital registry. Mostly women were in the age group of 40-54 years. Most common stage at presentation was IB and the histology being SCC. Not many differences seen in open v/s robotic techniques of radical hysterectomy except for shorter hospital stay and less need of blood transfusion in the robotic group. Local recurrence rates are comparable in both open and robotic groups. **Key words:** Robotic radical hysterectomy; open radical hysterectomy; cervical cancer

## Cervix: Oral Abstract

### Sample survey of cancer awareness in health care workers

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