

## Editorial

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Radiation has been used successfully to treat cervical cancer for nearly a century<sup>1</sup>. In France, the Curies isolated radium from uranium in 1898. Soon thereafter, Robert Abbe of New York City introduced radium for medical therapy and Howard Kelly of Baltimore pioneered radium treatment for cervical cancer. Since then radiation therapy has evolved to become a major modality in the treatment of many cancers, particularly those of the female reproductive tract.

Radiotherapy is an effective treatment modality for all stages of Ca Cx and is widely used in developing countries. As most of the cases present at advanced stages, such as stage III and IV, in which surgery is not possible, radiotherapy plays an important role in these patients<sup>2, 3, 4, 5,6,7,8</sup>.

The effectiveness of radiotherapy alone as curative treatment for carcinoma of the uterine cervix is well recognized. The combination of external beam irradiation and brachytherapy has been shown to be an effective treatment for Ca Cx patients. In the treatment policy evolved by Fletcher<sup>9</sup>, initial external beam radiotherapy (EBRT) is given to the whole pelvis to initiate primary tumor shrinkage and to sterilize microscopic disease within the pelvic lymph nodes. It is estimated that 15% of patients with stage I disease have pelvic lymph node involvement at presentation<sup>10</sup>. Intracavitary brachytherapy (BT) is then used to boost the dose to the primary tumor after completion of EBRT when the tumor volume is considerably smaller and the BT dose distribution to the residual tumor is improved. For advanced stage disease and bulky tumors, the incidence of nodal involvement is higher and therefore a larger proportion of the total dose is given by EBRT<sup>11</sup>.

The success of brachytherapy requires delivery of a high radiation dose to the tumor while sparing, to some degree, the surrounding normal tissue.

The American Brachytherapy Society (ABS) recommends multiple High Dose Rate (HDR) insertions to allow progressive tumor volume reduction, allowing more effective disease coverage with subsequent applications. Four to eight fractions of HDR-ICRT, with the dose ranging from 5.3 to 7.5 Gy per fraction and the total dose by EBRT from 20 Gy to 50.4 Gy for early and late stages of the diseases and ICRT is given during EBRT (but EBRT is not given on the day of HDR)<sup>3</sup>.

However, in most of the studies with radical radiotherapy treatment (EBRT+HDR-ICRT), disease free survival was found less than 50% in locally

advanced carcinoma cervix (Stage III and IV). In other words overall outcome was poor in advanced stage disease.

CT- and MRI-based three-dimensional computerized radiotherapy (3-D CRT) and intensity-modulated radiotherapy (IMRT) has shown improved results in locally advanced cervical cancer, but its routine use in developing countries is limited in the present scenario<sup>12</sup>. Use of interstitial brachytherapy to achieve better dose distribution in cases with a narrow vagina, inability to enter the cervical os, extension to the parametrium and lower vagina, and bulky lesions (where ICRT is not possible or possible only with suboptimal dose distributions) is yet to be started in many centers<sup>3</sup>.

Concurrent chemoradiotherapy in the treatment of cervical cancer offers definite improvement in pelvic control and overall survival and this is the acceptable treatment modality for advanced cases. The Cochrane Collaborative meta-analysis included data from 19 trials, 12 of which used platinum-based chemotherapy. The second, a Canadian study, based on 8 randomized trials, exclusively examined platinum-based chemoradiation. An absolute improvement in survival was estimated as 12% by the Cochrane group and 11% in the Canadian study<sup>6, 13,14</sup>. Controversy persists about the most appropriate drug for chemotherapy, and its dose and schedule with optimally delivered radiotherapy, to get similar or better results for tumor control and minimum toxicity. Currently, the value of adding cisplatin or cisplatin-based chemotherapy to radiation for treatment of locally advanced cervical cancer is strongly supported by National Cancer Institute of India. Use of concurrent chemoradiation, with weekly cisplatin, for advanced cancer cervix cases is ideal for developing countries.

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### Prof. TA Chowdhury

Chairman, Editorial Board.

### Prof. Saleha Begum Chowdhury

Editor.

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