ISSN PRINT 2319 1775 Online 2320 7876

 Journal Volume 11, Iss 04, 2022

THE RADIATION TREATMENT FOR CERVICAL CANCER THERAPY

Archana

Research Scholar, University department of physics,

Lalit Narayan Mithila University , Darbhanga

Prof. Surendra Kumar

Professor, University department of physics

Lalit Narayan Mithila University , Darbhanga

Abstract

External beam radiotherapy and brachytherapy are major treatments in the management of cervical cancer. For early-stage tumours with local risk factors, brachytherapy is a preoperative option. Postoperative radiotherapy is indicated according to histopathological criteria. For advanced local tumours, chemoradiation is the standard treatment, followed by brachytherapy boost, which is not optional. We present the update of the recommendations of the French Society of Oncological Radiotherapy on the indications and techniques for external beam radiotherapy and brachytherapy for cervical cancer.

Keywords : Brachytherapy , Radiotherapy, Chemoradiation , Histopathological

1. Introduction

Cervical cancer is the third leading cause of cancer deaths in women worldwide. In 2018, epidemiological data reported 3067 new cases of cervical cancer in France, ranking it 13th among the causes of female cancer deaths, with an incidence of 9.3/100,000 women. Cervical cancer is the fourth most common cancer in women under the age of 45 years [1]. Squamous cell carcinoma accounts for 90% of cases and adenocarcinoma 10% of cases. Human papillomaviruses (HPV) play a major role in the oncogenesis of this type of cancer.Since January 2021, HPV vaccination for girls and boys aged between 11 and 14 years is recommended in France, with the option for a catch-up vaccination for adolescents and young men between the ages of 15 and 19. The methods of screening for cervical cancer have also recently changed. Between the ages of 25 and 29 years, screening involves a cytological examination every three

ISSN PRINT 2319 1775 Online 2320 7876

 Journal Volume 11, Iss 04, 2022

years, after two examinations carried out on two consecutive years and showing no abnormality. In women aged 30 to 65 years, the HPV test replaces the cytological examination and is performed three years after the last normal cytological examination. If there is no cytological abnormality, further testing is required every five years, until the age of 65.Median age at diagnosis of cervical cancer is 51 years. Management will depend on the stage of the disease with radiotherapy playing a central role in the treatment of locally advanced cancers. This chapter presents the recommendations of the French society for radiation oncology (SFRO) in terms of therapeutic indications and technical methods of treating cervical cancer. It does not discuss tumours with a rare histology (e.g. neuroendocrine tumours, non-HPV induced adenosquamous carcinomas), fertility sparing strategies and cancers occurring in pregnant women requiring treatment in expert centres.Firstly, it should be stated that the literature data is primarily from the 2009 International Federation of Gynaecology and Obstetrics (FIGO) classification, which was updated in 2018. This update better reflects the prognostic value of tumour size (≤ or > 2 cm) as well as possible lymph node involvement. It also considers clinical data, information from imaging (magnetic resonance imaging [MRI] of the pelvic and para-aortic regions, positron emission tomography – computed tomodensitometry [PET-CT] for tumours larger than 4 cm or for suspected extracervical involvement) and histopathological results (e.g. analysis of hysterectomy specimen and/or lymph node dissection, if indicated). However, the 2018 FIGO classification does not provide an appropriate description of primary tumours having spread to the lymph nodes (e.g. stage IIIC1). As the TNM (Tumour, Node, Metastasis) classification, updated in 2021, provides information on local extension and potential pelvic or para-aortic lymph node involvement, it is the preferred classification. The 2018 FIGO classification and 2021 update of TNM classification are presented in Table 1. After a pre-therapeutic clinical and radiological assessment, tumours are classified as:early-stage cervical tumours: tumours limited to the cervix and no more than 4 cm in greatest dimension. These are stage IA to IB2 tumours according to 2018 FIGO classificationlocally advanced tumours: tumours measuring more than 4 cm in greatest dimension and/or with extension beyond the cervix (extension to the parametria, vagina, nearby organs, pelvic and/or para-aortic lymph node areas).

2. Primary treatment: role of preoperative brachytherapy

The standard first-line treatment for early cervical cancer is surgery: radical colpohysterectomy (±) with a surgical lymph nodal staging In the presence of adverse prognostic factors based on the MRI or conization (lymphovascular space invasion, greatest dimension more than 2 cm), preoperative brachytherapy is an option for which there is a low level of evidence (retrospective studies) but in most cases, it permits avoiding postoperative external beam radiotherapy. In fact, the combination.

ISSN PRINT 2319 1775 Online 2320 7876

 Journal Volume 11, Iss 04, 2022

3. Dose and fractionation

The dose of external radiotherapy delivered in the pelvis area should be 45 Gy in 25 fractions of 1.8 Gy, and not more than 45 Gy to avoid jeopardising dose escalation by the means of brachytherapy. Concomitant lymph node boosts deliver a total equivalent dose of around 60 Gy to suspicious macroscopic lymph nodes, if identified on the pre-treatment MRI and/or PET-CT. This dose takes the contribution of brachytherapy into account [. Simultaneous lymph node boosts allow the overall

4. Implantation conditions

Uterovaginal brachytherapy can be performed with high or pulsed dose rate technique. Uterovaginal applicators are most often implanted under general anaesthesia or spinal anaesthesia. Endocavitary uterovaginal applications under local anaesthesia or hypnosedation are also possible on a case-by-case basis . An MRI performed at a dose of 40 to 45 Gy of EBRT is useful to guide the choice of the applicator and positioning of interstitial catheters.The most advanced or least responsive toPost-therapeutic follow-up of cervical cancer is mainly based on a consultation, and clinical examination, including a full gynaecological examination at 6 to 8 weeks following brachytherapy. Subsequently, patients have a gynaecological examination every three to four months for two years, then every six months for three years, then annually. The purpose of the follow-up is to detect isolated local recurrences accessible for curative treatment, but also, to monitor and treat delayed rectal,

5. Conclusion

Cervical cancer requires multidisciplinary management. For early stage tumours, combining surgery and postoperative radiotherapy should be avoided, while tumours larger than 2 cm (or with lymphovascular involvement) may be proposed preoperative brachytherapy. In patients treated with upfront surgery, adjuvant chemoradiation is indicated in case of poor prognostic histological features (lymph node involvement, of tumour resection margins or parametrial involvement). Sedlis criteria are used to.

ISSN PRINT 2319 1775 Online 2320 7876

 Journal Volume 11, Iss 04, 2022

References

1.I. Barillot *et al.*Radiotherapy of cervix and endometrial carcinomaCancer Radiother(2016)

2.A. Escande *et al.*Outcome of early stage cervical cancer patients treated according to a radiosurgical approach: clinical results and prognostic factorsGynecol Oncol(2017)

3.F. Landoni *et al.*Randomised study of radical surgery versus radiotherapy for stage Ib-IIa cervical cancerLancet(1997)

4.A. Sedlis *et al* A randomized trial of pelvic radiation therapy versus no further therapy in selected patients with stage IB carcinoma of the cervix after radical hysterectomy and pelvic lymphadenectomy: a Gynecologic Oncology Group StudyGynecol Oncol(1999)

5.G.P. Mauro *et al.*Vaginal cuff brachytherapy in the adjuvant setting for patients with high-risk early-stage cervical cancerBrachytherapy(2019)

6.E. Bronsart *et al.*Evaluation of adjuvant vaginal vault brachytherapy in early stage cervical cancer patientsCancer Radiother(2020)

7.V. Veerasarn *et al.*A randomized phase III trial of concurrent chemoradiotherapy in locally advanced cervical cancer: preliminary resultsGynecol Oncol(2007)

8.E.K. Nugent *et al.*Chemoradiation in locally advanced cervical carcinoma: an analysis of cisplatin dosing and other clinical prognostic factorsGynecol Oncol(2010)

9.C. Chargari *et al.*Can stereotactic body radiotherapy replace brachytherapy for locally advanced cervical cancer? French society for radiation oncology statementCancer Radiother(2020)

10.P. Annede *et al.*Place of radiotherapy and surgery in the treatment of cervical cancer patientsCancer Radiother(2019)

11.Place of radiotherapy for treatment of metastatic cervical, vaginal and endometrial uterine cancer2024, Cancer/Radiotherapie
Show abstract

12.Mitochondria-targeted NO donor enables synergistic NO and photodynamic therapies for effective inhibition of cancer cell proliferation and migration2024, Dyes and Pigments
Show abstract

ISSN PRINT 2319 1775 Online 2320 7876

 Journal Volume 11, Iss 04, 2022

13.Spatial and task attention network for treatment response prediction in locally advanced cervical cancer radiotherapy2024, Biomedical Signal Processing and Control
Show abstract

14.Manipulating TGF-β signaling to optimize immunotherapy for cervical cancer
2023, Biomedicine and Pharmacotherapy

15.Modern Tools for Modern Brachytherapy2023, Clinical Oncology
Show abstract

16.Human papillomavirus infection and its relationship with common polymorphism of HLA gene by PCR method2023, Gene Reports