

Our experience using HDR brachytherapy for cervical cancer in Albania

Abstract

Purpose: The purpose of this study was to determine our examined and evaluated the Dosimetry aspect and the early local results of cervical cancer.

Methods and Materials: Between April 2009 to January 2012, a total of 122 patients were treated with HDR Ir-192 following EBRT radiotherapy treatment, (FIGO stage IIa-IIIa patients were treated with EBRT plus concomitant chemotherapy platine based, 60% of patients had radical hysterectomy after EBRT, 27% of the patients were treated with EB and were given 12Gy in 2 fractions, 73% of the patients were treated with EB using 3 fractions with 7Gy, 40% of cervical cancer patients were treated using the tandem ring applicator, while the other 60% were treated through the use of the vaginal applicator.

Results: A total of 100% of patients completed their treatment on average, 122 cases received a total of 80 Gy to the CTV from EBRT and Endocavitary Brachytherapy.

Conclusion: The combination of EBRT surgery and EB remains the best options of cervical cancer treatment.

Keywords: cervical cancer, brachytherapy, side effects, local relapse

Volume 2 Issue 5 - 2015

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Received: February 16, 2015 | **Published:** June 02, 2015

Abbreviations: EBRT, external beam radiation therapy; EB, endocavitary brachytherapy; OAR, organs at risk

Objective

Radiotherapy treatment through External Beam Radiation Therapy (EBRT) and Endocavitary Brachytherapy (EB) remains one of the main treatment methods for cervical cancer. In this study, we examined and evaluated the dosimetry aspect and the early local results of cervical cancer patients treated from 2009 to 2012 at Oncology Service, Mother Teresa University Hospital Centre in Tirana.

Materials and methods

From April 2009 to January 2012, a total of 122 patients were treated with HDR Ir-192 following EBRT radiotherapy treatment. The Gynsource unit with Ir-192, the 3D TPS, GynePlan from Eckert-Ziegler, Bebig, was used on the basis of image acquisition from a CT simulator for the delineation of both tumours and organs at risk (OAR). The applicators were loaded under condition of local anaesthesia.

Based on FIGO classification, the patients belonged to the stages of IIA-IIIa. A total of 121 patients were treated previously with EBRT, plus concomitant chemotherapy platine based. 60% of the patients had radical hysterectomy after EBRT. 27 % of the patients were treated with EB and were given 12 Gy in 2 fractions (on day 1 and day 8), 2 weeks or 1 month after surgery treatment. 73% of the patients were treated with EB using 3 fractions with 7 Gy per fraction (on day 1, 8 and 16), 2 weeks after completing EBRT or 1 month after surgery. 40% of cervical cancer patients were treated using the tandem ring applicator, while the other 60 % were treated through the use of the vaginal applicator.

Only 1 case of vaginal carcinoma T1N0 was treated exclusively with Brachytherapy.

A. HDR Gynsource Unit daily tests-----Interlocks checks

- i. Positioning of the source
- ii. Dosimetric parameters verifications

B. Patient preparation ---- Local Anesthesia

- i. Applicator insertion, immobilisation

C. HDR Ir192 Treatment Planning ---- Ct image acquisition

- i. CTV, OAR delineation on Gyneplan
- ii. Applicators riconstrucion
- iii. Dosimetry on TP from physicist on Gyneplan with IR 192
- iv. Plan approval from Physician

D. Treatment on Gynsource Unit with IR 192---- Treatment on Gynsource with IR 192

Results

Given that this was our first time to apply HDR treatment, we began lesser dose per fraction, increasing it over time in order to minimise adverse side effect. In general, this strategy allowed us to observe good results, whilst also increasing staff confidence.

- a. A total of 100 % of patients completed their treatment
- b. On average, 122 cases received a total of 80 Gy to the CTV from EBRT and Endocavitary Brachytherapy.
- c. OAR were limited at a mean dose per fraction of 4 Gy on rectal 5 in bladder (total dose 14 Gy and 15 Gy).
- d. So far, no acute side effects and no local relapse have been observed (Figures 1–7).

Types of applicators used at Mother Teresa University Centre

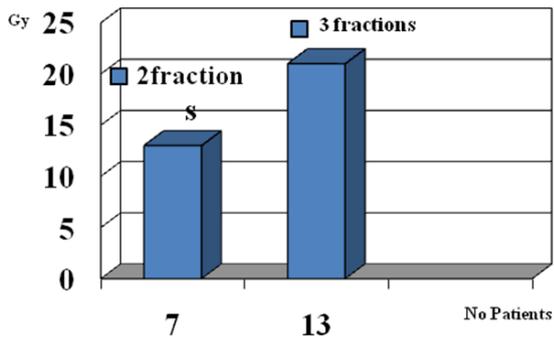


Figure 1 EB Patients treated with 12 and 21 Gy.

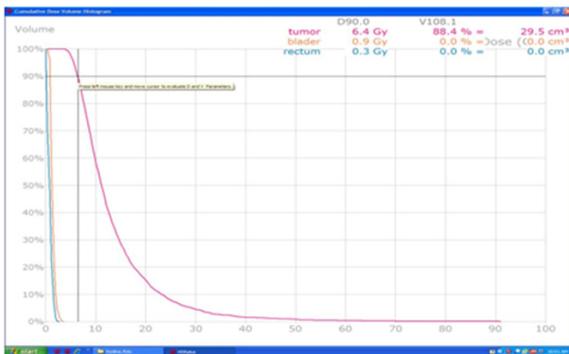


Figure 2 No Patients.



Figure 3 Brachytherapy machine.

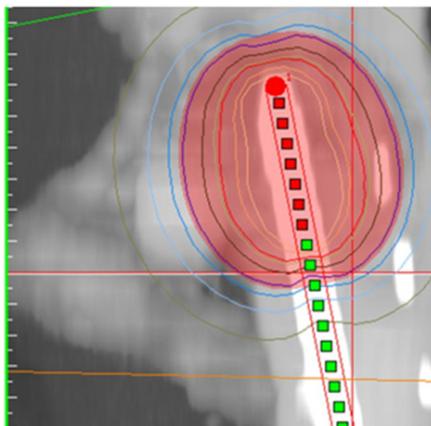


Figure 4 Isodose in vaginal applicator.

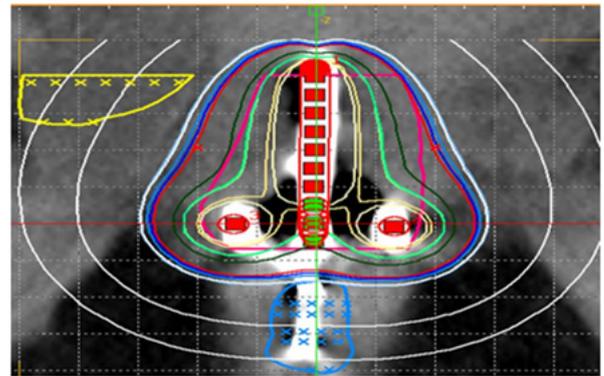


Figure 5 Isodose in tandem ring applicator.



Figure 6 60% of patients use vaginal applicator.



Figure 7 40% of patients use ring applicator.

Conclusion

- i. The combination of EBRT (with or without concomitant chemotherapy), surgery and EB remains the best options for cervical cancer treatment.
- ii. EB should be however be used carefully by well-trained personnel, following the appropriate standard protocols.

Acknowledgments

We would like to thank IBT Be big as our sponsor for this project.

Conflicts of interest

The author declares that there is no conflict of interest.

Funding

None.