Low dose rate brachytherapy using a tandem for cervical cancer

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Abstract

Purpose: To report the results of the Instituto Nacional de Cancerología México of low dose rate brachytherapy for cervical cancer using only a tandem. A proportion of patients was treated with only a tandem, without ovoids, due to the distorted anatomy because of the tumour or previous external radiation, or sometimes due to physician preference.

Material and methods: We report the results of 120 patients treated only with a tandem and the impact of this treatment on local control and survival from January 2005 to December 2006. The frequency of FIGO stage was: IIB 47%, IIIB 34%, IIA 9%, IIA 4%, IB2 3% and IB1 3%. The median overall treatment time was 12 weeks. The value of the external beam radiation dose was 50-50.4 Gy in all patients and the value of the brachytherapy dose was 30 Gy given to point A.

Results: Complete clinical response was 83% at the end of brachytherapy. Time to recurrence and frequency were: IB1 – 17 months (20%), IB2 – none, IIA – 8 months (8.3%), IIB – 11 months (40%) and IIIB – 14 months (25%). 10.8% of patients had a persistent tumour, 3.3% had progression during treatment in stage IIB. Survival in months was 26 months for stage IB1, 30 for IB2, 25 for IIA, 28 for IIB, 27 for IIIA and 24 for IIIB. 25% of patients died during follow-up.

Conclusions: These preliminary results suggest that there is no significant difference between the treatment with brachytherapy using a tandem and ovoids or a tandem alone.

Key words: brachytherapy, cervical cancer, LDR, tandem.
Table 1. Clinical characteristics

| FIGO stage | IIB | IIA | IIB | IIB | IIB |
|------------|-----|-----|-----|-----|-----|
| Rate (%)   | 3   | 3   | 9   | 4   | 34  |
| Mean age (years) | 39  | 46  | 60  | 56  | 49  |
| Total treatment time (weeks) | 12.7 | 13.4 | 11.8 | 13.4 | 13.2 |

Results

Complete clinical response was observed in 83% of patients at the end of brachytherapy. Time and recurrence rate according to FIGO stage was: IB1 – 17 months (20%), IB2 – none, IIA – 8 months (8.3%), IIB – 11 months (40%) and IIB – 14 months (25%). 10.8% had persistent tumour, 3.3% had progression during treatment in stage IIB. Median survival time was 26 months for IB1, 30 for IB2, 25 for IIA, 28 for IIB, 24 for IIIB. 25% of patients died during follow-up. Overall survival rate was 100% in clinical stage IB1-IB2, 95% in IIA, 65% in IIB, 96% in IIA and 45% in IIB (Fig. 1).

Proctitis grade 2-3 was present in 12% and cystitis grade 2-3 in 7% of patients. Summarized complication rate was 18%.

Discussion

The treatment of cervical cancer with radiotherapy includes external beam radiotherapy and brachytherapy. The applicators consist most often of a tandem and 2 ovoids in the brachytherapy device. Complete clinical response was observed in 83% of patients at the end of brachytherapy. The application can only be done with the tandem due to infundibular vagina, very high doses to organs at risk or disruption or delay must be avoided. Local control is influenced by the total time including external beam radiotherapy and brachytherapy. In our study, the total median treatment time was 12 months, compared to 8 months in the literature [16, 17].

Our results show that local control and survival are the same as in the literature, even without the application of ovoids in the brachytherapy device. Complete clinical responses are expected to be the same. Other important risk factors are clinical stage, age, and histological type, which must be taken into account for the results.

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