



No benefit of radiotherapy on survival of stage I endometrial cancer

A L Major (1,4), Tebeu (4,5), H M Verkooijen (3), Y Popowski (2), F Lüdicke (4), M Usel(3), C Bouchardy (3)

1) Department of Gynaecology, Geneva University Hospitals, 2) Division of Radio-Oncology, Geneva University Hospitals, 3) Geneva Cancer Registry, Institute for Social and Preventive Medicine, University of Geneva, 4) Fondations pour Recherches Médicales, University of Geneva, Switzerland 5) Department of Gynaecology, Yaounde University Hospital, Cameroon

Objective

We assessed the impact of radiotherapy on survival of patients with early stage endometrial cancer, for whom the usefulness of external radiotherapy is still controversial (1-3).

Patients and methods:

We considered all patients operated for endometrial cancer confined to the uterus (stage-I) recorded between 1980-1996 at the Geneva cancer registry. We excluded patients with stage-Ia (confined to the endometrium) and stage-Ic (myometrial invasion \geq 50%) Grade3 cancer. We compared patients treated with brachytherapy only and patients treated with external radiotherapy with or without brachytherapy, to patients that received no radiotherapy. Disease specific survival was analysed by actuarial method, and compared with log-rank test. We used Cox proportional hazard analysis to calculate the risk to die of endometrial cancer according to type of radiotherapy, accounting for other prognostic factors.

Results

Table 1 describes the demographic, tumour and treatment characteristics of the 270 patients according to the type of radiotherapy. 87 (32%) women had no radiotherapy, 94 (35%) women received only brachytherapy, and 89 (33%) were treated with external radiotherapy with or without brachytherapy. Women who received external radiotherapy were on average almost four years younger than non-irradiated women. The proportion of patients treated without radiotherapy increased over the study period: between 1980-87 23% were not irradiated versus 40% between 1987-96. The proportion of patients treated with brachytherapy decreased from 43% to 28% and the proportion of patients treated with external radiotherapy remained relatively stable. Patients treated in the private clinics were less often irradiated, while patients treated in the public hospitals received more frequently brachytherapy. This study population included 162 (60%) patients in the low risk category and 108 in the high risk category.

Figure 1 presents the five-year overall survival curves according to type of radiotherapy. For non-irradiated patients, the overall 5-year survival rate was 87% (95%CI 80-94%) and for patients treated with brachytherapy 91% (95%CI 86-97%) and for patients treated with external radiotherapy with or without brachytherapy 84% (95%CI 76-92%).

Table 2 shows the disease specific survival rates and mortality risks according to type of radiotherapy, for all patients together and for low risk and high risk patients separately. For all patients together univariate analysis shows that, neither brachytherapy nor external radiotherapy significantly modified disease specific mortality risks.

Panel A: The risk to die of endometrial cancer, after adjustment for age and tumour profile, was 3-6 fold increased insignificantly (Hazard ratio 3-6, 95% CI: 1-0-13-4, $p=0.0555$).

Panel B: In the category of patients with low risk tumours, external radiotherapy significantly increased the risk to die of endometrial cancer (multi-adjusted Hazard ratio 9-4, 95% CI: 1-0-86-7).

Panel C: For high risk patients, neither external radiotherapy nor brachytherapy modified the endometrial cancer mortality risk. Compared to non-irradiated patients, those treated with brachytherapy were at similar risk to die of endometrial cancer. External radiotherapy did not significantly modify the risk to die from endometrial cancer.

Table 2 Risk of death from endometrial cancer according to type of radiotherapy (Panel A, B, C)

	N (%)	Mortality from endometrial cancer			
		N of deaths	5 year survival	Unadjusted HR (95% CI)	Adjusted HR
None	87	5	94% (89-99)	1	1
Brachytherapy	94	5	94% (90-99)	0.9 (0.3-3.2)	1.3 (0.4-4.8)
External +/- Brachytherapy	89	9	89% (82-96)	1.9 (0.6-5.6)	3.6 (1.0-13.4)

	N (%)	Mortality from endometrial cancer			
		N of deaths	5 year survival	Unadjusted HR (95% CI)	Adjusted HR
None	61	2	96.6% (91.9-100)	1	1
Brachytherapy	75	2	97.2% (93.3-100)	0.8 (0.1-5.7)	1.7 (0.2-13.9)
External +/- Brachytherapy	26	3	88.5% (76.2-100)	3.7 (0.6-22.4)	9.4* (1.0-86.7)

* = P < 0.05

	N (%)	Mortality from endometrial cancer			
		N of deaths	5 year survival	Unadjusted HR (95% CI)	Adjusted HR
None	26	3	87.3% (73.9-100)	1	1
Brachytherapy	19	3	84.2% (67.8-100)	1.4 (0.3-6.9)	1.6 (0.3-8.1)
External +/- Brachytherapy	63	6	89.9% (82.1-97.6)	0.9 (0.2-3.5)	1.9 (0.4-9.1)

1= reference

Table 1 Patient and tumour characteristics of women with endometrial cancer according to type of adjuvant therapy

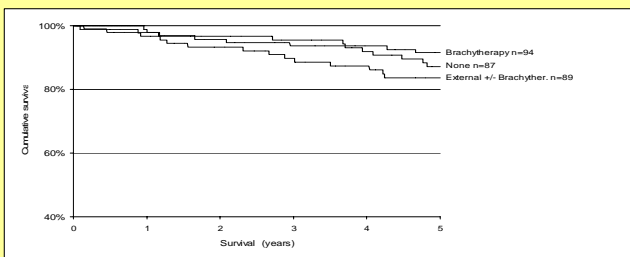
Characteristics	Radiotherapy			Total
	No	'Brachytherapy'	'External radiotherapy +/- Brachy'	
	N=87 (%)	N=94 (%)	N=89 (%)	N=270 (%)
Mean age	66.6 (38-91)	64.9 (35-90)	62.9 (33-81)	64.8 (33-91)
Period of diagnosis				
1980-87	29(23.0)	54(43.0)	23(26.0)	89(100.0)
1988-96	58(40.0)	40(28.0)	61(37.0)	164(100.0)
Healthcare sector				
Private	50(41.0)	34 (28.0)	37 (31.0)	121 (100.0)
Public	37 (25.0)	60 (40.0)	52 (35.0)	149 (100.0)
Tumour risk profile				
Stage IB grade1	52 (44.0)	55 (47.0)	10 (9.0)	117 (100.0)
Stage IB grade2	9 (20.0)	20 (44.0)	16 (36.0)	45 (100.0)
Stage IB grade3	6 (32.0)	5 (26.0)	8 (42.0)	19 (100.0)
Stage IC grade1	14 (22.0)	9 (14.0)	40 (63.0)	63 (100.0)
Stage IC grade2	6 (23.0)	5 (19.0)	15 (58.0)	26 (100.0)
Risk Category				
StageIBG1-2	61(638.0)	75(46.0)	26(16.0)	162(100.0)
StageIBG3+ICG1-2	26(24.0)	19(18.0)	63(58.0)	108(100.0)

IB: myometrial invasion < 50%; IC: myometrial invasion \geq 50%

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Figure 1: Overall survival curves for all the studied patients according to type of radiotherapy



Conclusion

Radiotherapy does not improve the survival of stage I endometrial cancer.

After radiotherapy:

Low risk patients (stage IB G1-2) have an increased overall mortality and endometrial cancer mortality risk.

High risk patients (stage IB G3+IC G1-2) appear to have no survival benefit