

The Relationship of Myometrial Invasion Between Other Prognostic Parameters in Endometrial Cancer

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ABSTRACT

OBJECTIVE: The aim of this study is to investigate the relationship between deep myometrial invasion and other prognostic factors in endometrial cancer. Recurrence rates, disease free survival and overall survival rates were evaluated in endometrial cancer patients with MI>50%.

STUDY DESIGN: A total of 132 patients with endometrial cancer who underwent surgical treatment between 2001 and 2011 were identified. Demographic, clinicopathological, surgical/adjvant treatment and follow-up data were extracted.

RESULTS: Pelvic lymph node invasion ratio was 28,9% and para-aortic lymph node invasion ratio was 15,5% in patients with myometrial invasion is greater than 50%. Other prognostic factors especially lympho-vascular space invasion and pelvic/para-aortic lymph node metastasis were significantly higher when myometrial invasion is above 50% and also there was significant difference in recurrence rates, overall survival and disease free survival rates between patients with superficial and deep myometrial invasion ($p<0.05$).

CONCLUSION: Myometrial invasion is an important prognostic parameter and can be determined intraoperatively to decide whether to perform pelvic and para-aortic lymph node dissection.

Keywords: Endometrial cancer, Myometrial invasion, Overall survival

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Introduction

Endometrial cancer is the most common gynecologic malignancy in developed countries and survival in endometrial carcinoma depends on many factors (1). Most women with endometrial cancer in early stage have a good prognosis with an overall survival (OS) rates up to 90% (2). Especially in early stage of endometrial cancer, the necessity of pelvic and/or para-aortic lymphadenectomy is still uncertain. Lymphadenectomy is often omitted if the surgeon feels that

the risk of lymph node metastasis is less likely on preoperative and intraoperative findings (3). However, it is generally agreed that patients with any of these risk factors including serous or clear cell histology, grade 3 tumors, tumor size >2 cm, deep myometrial invasion would have a high risk of nodal metastasis and should be candidates for lymphadenectomy (4). In addition, age, histologic subtype, tumor grade, FIGO stage and myometrial invasion are reported to be the most important predictors of OS and recurrence free survival (5-8). In the present study we discussed the relationship between myometrial invasion and other prognostic parameters and calculated OS, disease free survival (DFS) and recurrence rates in regards of myometrial invasion degree.

Material and Method

A total of 132 patients with endometrial cancer who underwent surgical treatment at Haseki Research and Training Hospital, Istanbul between 2001 and 2011 were identified. Local Institution's Ethics committee approval was received. All patients underwent staging surgery including total abdominal hysterectomy (TAH), bilateral salpingo-oophorectomy (BSO), pelvic and para-aortic lymphadenectomy, partial or total omentectomy and peritoneal washing cytology. Patients with incomplete surgery were excluded. Histologic type, grade, lymphovascular space invasion (LVSI), myometrial invasion, pelvic+/- para-aortic lymph node metastasis, recurrence, peritoneal washing cytology were also noted. All pa-


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tients with high risk factors for recurrence received either adjuvant radiotherapy (RT). Stage 4 patients and patients with incomplete data were excluded from the analysis.

Demographic, clinicopathological, surgical/adjuvant treatment and follow-up data were extracted from Hospital’s annual reports by an investigator. According to pathology reports, patients who had myometrial invasion above 50 % were evaluated with other prognostic factors as lympho-vascular space invasion (LVSI), lymph node metastasis, cervical involvement, omental involvement and further recurrence, DFS and OS rates were calculated with Kaplan-Meier statistical analysis.

Statistical analysis was performed by NCSS (Number Cruncher Statistical System) 2007 Statistical Software (Utah, USA). Descriptive statistics, chi-square and T test were used for analysis; and effect of myometrial invasion on survival rates was investigated with Kaplan Meier and Log Rank test. The p value of <0.05 was considered significant.

Results

A total of 132 patients were included in the study. Demographic characteristics are shown in table 1. Any of the preoperative features of patients was not statistically significant (except gravidity and parity) between patients who had myometrial invasion is above and below 50%.

All parameters including; peritoneal washing cytology, serosal invasion, LVSI, cervical glandular and stromal invasion, pelvic and paraaortic lymph node invasion and omental invasion; were significantly higher in cases who had myometrial invasion more than 50% (Table 2).

Overall survival and DFS rates were significantly lower in patients with deep myometrial invasion, compared to patients with superficial my-

ometrial invasion, as well as recurrences were significantly higher in patients with deep myometrial invasion. (Table 3).

Disease free survival and OS were statistically lower in patients who had-myometrial invasion- above 50% when a log rank test was performed (p<0.05) (Figure 1-2).

Table 1: Descriptive characteristics

		Myometrial invasion <50% n:87		Myometrial invasion >50% n:45		p
Age		58.8±9.9		59.1±10.6		NS
Gravida		4.9±2.9		3.9±1.9		<0.05
Parity		3.9±2.4		2.8±1.9		<0.05
Length		158.8±7.1		158.2±6.4		NS
Weight		86.4±15.5		84.9±14.4		NS
BMI(body mass index)		34.3±6.4		34.2±7.1		NS
Menopause	-	18	20,6%	8	17,7%	NS
	+	69	79,3%	37	82,2%	
Family history of endometrium cancer	-	86	98,8%	44	97,7%	NS
	+	1	1,15%	1	2,22%	
Diabetes mellitus	-	64	73,5%	34	75,5%	NS
	+	23	26,4%	11	24,4%	
Hypertension	-	43	49,4%	21	46,6%	NS
	+	44	50,5%	24	53,3%	

Table 2: Relationship between myometrial invasion and other prognostic factors

		Myometrial invasion <50% n:87		Myometrial invasion >50% n:45		p
Peritoneal washing cytology	-	84	96.5%	39	86.6%	<0.05
	+	3	3.4%	6	13.3%	
Uterine serosal invasion	-	87	100 %	35	77.7%	<0.05
	+	0	0%	10	22.2%	
Lympho-vascular space invasion	-	78	89.6%	19	42.2%	<0.05
	+	9	10.3%	26	57.7%	
Grade	Grade 1	19	76%	33	58.9%	<0.05
	Grade 2	4	16%	19	33.9%	
	Grade 3	2	8%	4	7.1%	
Cervical stromal invasion	-	83	95.4%	31	68.8%	<0.05
	+	4	4.6%	14	31.1%	
Pelvic lymph node	-	85	97.7%	32	71.1%	<0.05
	+	2	2.3%	13	28.8%	
Para-aortic lymph node	-	87	100%	38	84.4%	<0.05
	+	0	0%	7	15.5%	
Omentum invasion	-	87	100%	40	88.8%	<0.05
	+	0	0%	5	11.1%	

Table 3: Survival and recurrence rates of the patients

		Myometrial invasion <%50 n:87		Myometrial invasion >%50 n:45		p
Recurr	(-)	79	90.8%	20	44.4%	
	(+)	8	9.2%	25	95.5%	
Follow up (month) (median- IQR)		86 (65-106)		68 (42,5-98)		<0.05
OS (month) (median- IQR)		86 (65-106)		68 (42,5-98)		<0.05
DFS (month) (median- IQR)		80 (65-105)		45 (12,9-76,5)		<0.001

OS: Overall survival, DFS: Disease free survival

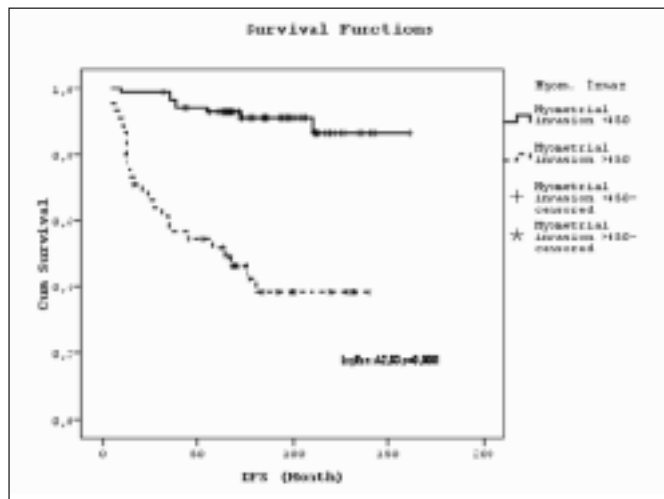


Figure 1: Disease free survival rates

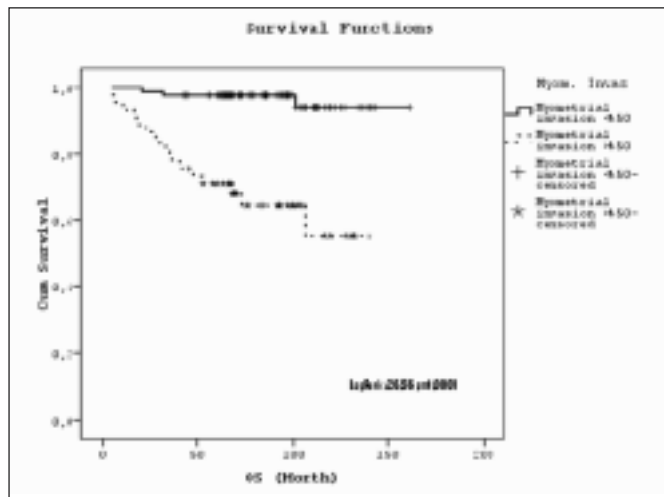


Figure 2: Overall survival rates

Discussion

Endometrial cancer is the sixth most common cancer in women (9); fortunately, most of the cases are low grade, low stage endometrioid adenocarcinomas (10-11). Hence studies seeking to define subset of patients with low grade endometrioid adenocarcinoma who could most benefit from surgical

staging (12-14). While complete surgical staging approach is recommended for endometrial cancer (15); some authors declared opposite that when considering the risk/benefit ratio, total lymphadenectomy is not recommended in low risk group (16). In women with deep myometrial invasion, uterine serosal invasion and lesions >2 cm in size had statistically significant higher rate of retroperitoneal lymph nodes metastasis in comparison with lesions <2 cm in size (17). In our study when myometrial invasion is above 50%, pelvic lymph node invasion was 28.89% and para-aortic lymph node invasion was 15.5%. By that way greater than 50% myometrial invasion is significant for lymph node invasion (p<0.05). Myometrial invasion is a prognostic factor for extra uterine spread (18) and an important predictor for pelvic and para-aortic lymph node dissection.

Besides depth of myometrial invasion is an important prognostic factor and determination of myometrial invasion is essential to decide surgical staging and adjuvant treatment options (18). High grade histology and deep myometrial invasion are associated with significantly higher incidence of retroperitoneal nodal metastases (17,19,20). Myometrial invasion is associated with other prognostic factors. In our study, myometrial invasion more than 50% is strongly associated with pelvic and paraaortic lymph node metastasis (p<0.05). Also, other prognostic values such as; peritoneal washing cytology, cervical stromal and gland invasion, LVSI, uterine serosal invasion and omental invasion were associated with deep myometrial invasion (p<0.05)

We found when only myometrial invasion is above 50%; the recurrence rate is 55.5% and both OS and DFS rates were significantly lower in patients with superficial myometrial invasion compared to patients with deep myometrial invasion (p<0.05). Age, histologic subtype, tumor grade, FIGO stage and myometrial invasion are the most important predictors of OS and DFS (5,8). Myometrial invasion also changed the stage (21) and decision of adjuvant treatment (6)

In a study, the authors showed that deeply myometrial invasion predicts pelvic and para-aortic lymph node metastasis in 19% and 14% of patients respectively (22). Deep myometrial invasion, generally assessed intraoperatively, has been

recognized as one of the most important predicting factors for nodal metastasis (21). Since myometrial invasion is a parameter that can be measured intraoperatively and guide the decision whether to perform staging (23). It is still unclear the operative assessment of myometrial invasion (24); however high frozen/permanent section should be taken into consideration for lymphadenectomy (25,26).

Limitations of our study were, small number of cases and several team of surgeons who performed the surgery. Our study clearly demonstrates that; when myometrial invasion is identified pelvic and para-aortic lymphadenectomy should be performed.

In conclusion myometrial invasion is an important prognostic parameter and can be evaluated intraoperatively to decide whether to perform pelvic and para-aortic lymph node dissection.

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