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ORIGINAL RESEARCH

Prognostic Factors and Role of Pelvic Lymphadenectomy in Patients with Uterine Sarcoma: A Multi-Center Population-Based Cohort Study

Yunmei Zhuo[1,*], Wanwan Ji[2,*], Xianzhong Cheng[3]

[1]Department of Chemotherapy, Jiangsu Cancer Hospital, Jiangsu Institute of Cancer Research, The Affiliated Cancer Hospital of Nanjing Medical University, Nanjing, People's Republic of China; [2]Department of Surgery, Jiangsu Cancer Hospital, Jiangsu Institute of Cancer Research, The Affiliated Cancer Hospital of Nanjing Medical University, Nanjing, People's Republic of China; [3]Department of Gynecologic Oncology, Jiangsu Cancer Hospital, Jiangsu Institute of Cancer Research, The Affiliated Cancer Hospital of Nanjing Medical University, Nanjing, People's Republic of China

*These authors contributed equally to this work

Correspondence: Xianzhong Cheng, Email cheng201809@gmail.com

Objective: The prognostic factors and impact of pelvic lymphadenectomy in uterine sarcomas remain unclear. This study aimed to investigate the prognostic factors and role of pelvic lymphadenectomy in uterine sarcoma.

Methods: We analyzed the data of uterine sarcoma patients obtained from 17 centers through the Surveillance, Epidemiology, and End Results (SEER) database from 2010 to 2021. After propensity score matching analysis, the characteristics of the patients who underwent pelvic lymphadenectomy and those who did not were compared. Univariate and multivariate analyses were performed on patient data before and after propensity score matching. Additionally, survival analyses were performed for different subgroups.

Results: Multivariate COX regression analysis revealed that age, histology, tumor grade, and AJCC stage were correlated with prognosis ($p < 0.001$). Kaplan-Meier survival curve analysis showed that there was no significant difference in survival between the pelvic lymphadenectomy and non-pelvic lymphadenectomy groups ($p=0.431$). No statistically significant differences were observed in any of the subgroups analyzed, including age, histology, tumor size, tumor grade, stage, and marital status ($p > 0.05$).

Conclusion: Patient age, histological type, grade, and stage were significantly associated with the prognosis of uterine sarcoma. Additionally, pelvic lymphadenectomy did not confer a survival benefit to patients with this disease.

Keywords: prognostic factors, pelvic lymphadenectomy, uterine sarcoma, SEER

Introduction

Uterine sarcoma is a rare tumor originating from mesenchymal cells and accounts for approximately 1% of all malignancies in the female genital tract and 3–7% of tumors found in the uterus.[1,2] These tumors are characterized by their aggressive behavior with a poor overall prognosis.[3] In histological terms, uterine sarcomas are a heterogeneous group of tumors. The most common subtype is leiomyosarcoma, followed by endometrial stromal sarcoma, adenocarcinoma, and undifferentiated sarcoma.[4,5]

Surgery is the basis of treatment for uterine sarcoma and should include hysterectomy and bilateral salpingo-oophorectomy, but controversy exists on the role of pelvic and/or para-aortic lymphadenectomy.[6,7] In cases where the disease has extended beyond the uterus, optimal cytoreductive surgery (aimed at achieving no residual disease) is associated with better overall survival rates compared to cases where residual disease is present at the end of surgery.[8] Some studies indicated that the assessment of lymph nodes not only provided prognostic value through accurate staging but also played a crucial role in formulating individualized adjuvant treatment plans. This was particularly significant for advanced-stage diseases, highlighting its substantial therapeutic implications.[9] A recent meta-analysis involving a total of

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4867 patients suggested that lymphadenectomy did not demonstrate a significant benefit on survival rates.[10] Additionally, lymphadenectomy may be associated with prolonged surgical duration, increased blood loss, risks of intraoperative injury, and a higher incidence of complications such as edema.[6,9] Furthermore, due to the limited number of cases regarding the role of pelvic lymphadenectomy in uterine sarcoma, coupled with inconsistent data and high heterogeneity, the significance of lymphadenectomy remains unclear within this patient population.[11,12]

The role of lymphadenectomy in the management of uterine sarcoma remains a subject of debate, as highlighted in the NCCN Guidelines Version 3. 2025. Currently, there is a lack of large-scale studies investigating the prognostic factors associated with uterine sarcoma and the significance of pelvic lymph node dissection. Furthermore, systematic analyses categorized by various pathological types are notably absent. In response to this research gap, we conducted a comprehensive study utilizing the SEER database to explore the prognostic factors related to uterine sarcoma and evaluate the clinical value of pelvic lymphadenectomy. Our findings aim to provide valuable insights that can enhance clinical practice.

Methods

This retrospective study used data from the Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute (http://seer.cancer.gov). Data on patients diagnosed with uterine sarcoma from 2000 to 2021 were collected from the SEER database using the SEER*Stat software, version 8.4.4. The database "SEER Research Data, 17 Registries, Nov 2023 Sub (2000–2021)" was searched for "Site and Morphology, Behavior recode for analysis= Malignant", and "Site and Morphology, Site recode ICD-O-3/WHO 2008= Corpus and Uterus, NOS".

The selection criteria were set as follows: (1) Years of diagnosis: 2000–2021; (2) Site recode ICD-O-3/WHO 2008: Corpus and Uterus, NOS; (3) ICD O-3 histology codes of histology subgroup were defined as following: Leiomyosarcoma (8890/3); Endometrial stromal sarcoma (8930/3, 8931/3); Undifferentiated sarcoma (8805/3); Adenosarcoma (8933/3). Exclusion criteria were as follows: (1) Survival month was unknown; (2) Patients have not underwent surgery; (3) The information of pelvic lymphadenectomy was unknown. The patient information had been researched by the United States Department of Health and Human Services. The data is publicly available and de-identified after permission. Therefore, the research did not require participant consent and was exempted by the ethics committee of Jiangsu Cancer Hospital.

Statistical Analysis

Statistical analysis was performed using the IBM SPSS Statistics software (version 27.0) and GraphPad Pism9.5 (version 9.5). The baseline characteristics of the pelvic lymphadenectomy and non-pelvic lymphadenectomy groups were compared using the χ^2-test. We also performed propensity score matching (PSM) using a 1:1 matching protocol to minimize possible confounding effects in the comparison between pelvic lymphadenectomy and non-pelvic lymphadenectomy cohorts among all enrolled patients. The Cox proportional hazards model was used for the univariate and multivariate survival analyses. The Kaplan-Meier method was used to construct survival curves, and the Log rank test for trend was used to determine the statistical significance of the difference in Kaplan-Meier survival. All tests were two-sided, with statistical significance set at $P < 0.05$.

Results

Comparison of the Clinical Characteristics of Patients with Pelvic Lymphadenectomy and Without Pelvic Lymphadenectomy

Among 5734 patients diagnosed with uterine sarcoma between 2000 and 2021, 4465 underwent surgical treatment and had complete data on lymph node resection. This cohort included 2800 patients who did not undergo lymphadenectomy and 1665 who underwent pelvic lymphadenectomy. Our analysis revealed that the p-values for age, primary site, histological type, tumor size, grade, AJCC stage, and para-aortic lymph node resection were all less than 0.001 in both the pelvic lymphadenectomy and non-pelvic lymphadenectomy groups. Following 1:1 PSM analysis, the final sample size in each group was 852, with significant differences ($p < 0.001$) observed only for the year of diagnosis and tumor size. Compared with non-pelvic lymphadenectomy group, the portion of tumor size >50 mm and portion of patients diagnosed from 2016 to 2021 in pelvic lymphadenectomy group was higher than in non-pelvic lymphadenectomy group ($p<0.001$). The clinical and pathological characteristics of the patients in the lymph node resection group and those without lymph node resection group are shown in Table 1.

Table 1 Clinical and Pathological Characteristics of Patients in the Lymph Node Resection Group and Those Without Lymph Node Resection Group Before and After PSM Matching

Characteristics	Before PSM		*P*	After PSM		*P*
	NL	L		NL	L	
	n=2800	n=1665		n=852	n=852	
Age, years			<0.001			0.050
20-49	980 (35.0)	467 (28.0)		274 (32.2)	228 (26.8)	
50-64	1217 (43.5)	724 (43.5)		358 (42.0)	384 (45.1)	
≥65	603 (21.5)	474 (28.5)		220 (25.8)	240 (28.2)	
Year of diagnosis			0.738			<0.001
2010-2015	1494 (53.4)	897 (53.9)		783 (91.9)	425 (49.9)	
2016-2021	1306 (46.6)	768 (46.1)		69 (8.1)	427 (50.1)	
Race			0.109			0.200
White	1976 (70.6)	1187 (71.3)		610 (71.6)	596 (70.0)	
Black	528 (18.9)	274 (16.5)		120 (14.1)	150 (17.6)	
Others	290 (10.4)	200 (12.0)		120 (14.1)	104 (12.2)	
Unknown	6 (0.2)	4 (0.2)		2 (0.2)	2 (0.2)	
Primary Site			<0.001			0.006
Endometrium	963 (34.4)	799 (48.0)		372 (43.7)	406 (47.7)	
Myometrium	778 (27.8)	327 (19.6)		245 (28.8)	182 (21.4)	
Corpus uteri	217 (7.8)	116 (7.0)		64 (7.5)	54 (6.3)	
Uterus	607 (21.7)	295 (17.7)		114 (13.4)	145 (17.0)	
Fundus uteri	206 (7.4)	107 (6.4)		48 (5.6)	52 (6.1)	
Others	29 (1.0)	21 (1.3)		9 (1.1)	13 (1.5)	
Histology			<0.001			0.016
Leiomyosarcoma	1650 (58.9)	701 (42.1)		400 (46.9)	371 (43.5)	
Endometrial stromal sarcoma	731 (26.1)	544 (32.7)		255 (29.9)	266 (31.2)	
Undifferentiated sarcoma	362 (12.9)	72 (4.3)		14 (1.6)	35 (4.1)	
Adenosarcoma	57 (2.0)	348 (20.9)		183 (21.5)	180 (21.1)	
Tumor size			<0.001			<0.001
≤50mm	500 (17.9)	359 (21.6)		183 (21.5)	176 (20.7)	
>50mm	1807 (64.5)	1068 (64.1)		486 (57.0)	555 (65.1)	
Unknown	493 (17.6)	238 (14.3)		183 (21.5)	121 (14.2)	
Grade			<0.001			0.005
G1	284 (10.1)	165 (9.9)		88 (10.3)	78 (9.2)	
G2	344 (12.3)	223 (13.4)		158 (18.5)	113 (13.3)	
G3/G4	886 (31.6)	710 (42.6)		288 (33.8)	343 (40.3)	
Unknown	1286 (45.9)	567 (34.1)		318 (37.3)	318 (37.3)	
AJCC stage			<0.001			0.016
I	1564 (55.9)	1011 (60.7)		544 (63.8)	512 (60.1)	
II	239 (8.6)	169 (10.2)		74 (8.7)	89 (10.4)	
III	204 (7.3)	185 (11.1)		58 (6.8)	94 (11.0)	
IV	567 (20.3)	230 (13.8)		138 (16.2)	126 (14.8)	
Unknown	226 (8.1)	70 (4.2)		38 (4.5)	31 (3.6)	
Marital status			0.309			0.401
Married	1452 (51.9)	870 (52.3)		461 (54.1)	445 (52.2)	
Single	1213 (43.3)	731 (43.9)		358 (42.0)	381 (44.7)	
Unknown	135 (4.8)	64 (3.8)		33 (3.9)	26 (3.1)	
Para-Aortic Lymphadenectomy			<0.001			1.000
Yes	51 (1.8)	785 (47.1)		776 (91.1)	776 (91.1)	
No	2724 (97.3)	777 (46.7)		51 (6.0)	51 (6.0)	
Unknown	25 (0.9)	103 (6.2)		25 (2.9)	25 (2.9)	

Prognostic Factors Influencing OS in Patients with US

Univariate COX regression analysis showed that age (P < 0.001), race (P < 0.001), primary site (P < 0.001), histology (P < 0.001), tumor size (P < 0.001), tumor grade (P < 0.001), AJCC stage (P < 0.001), and marital status (P < 0.001) were significant risk factors for tumor-specific mortality in patients who did not undergo PSM. Univariate COX regression analysis showed that age (P < 0.001), race (P < 0.001), primary site (P < 0.001), histology (P < 0.001), tumor size (P < 0.001), tumor grade (P < 0.001), AJCC stage (P < 0.001), and marital status (P < 0.001) were significant risk factors for tumor-specific mortality in patients who underwent PSM (Table 2).

Multivariate COX regression analysis showed that age (p < 0.001), race (p < 0.001), histology (p < 0.001), tumor size (p < 0.001), tumor grade (p < 0.001), AJCC stage (p < 0.001), and marital status (p < 0.001) were significant risk factors for tumor-

Table 2 Univariate COX Proportional Hazard Regression Analysis of Tumor-Specific Survival in Uterine Sarcoma Before and After Propensity Matching

Characteristics	Before PSM		P	After PSM		P
	HR	95% CI		HR	95% CI	
Pelvic Lymphadenectomy			0.197			0.502
No	Reference	Reference		Reference	Reference	
Yes	0.941	0.858–1.032	0.197	1.049	0.912–1.208	0.502
Age, years			<0.001			<0.001
20-49	Reference	Reference		Reference	Reference	
50-64	1.883	1.681–2.109	<0.001	1.914	1.588–2.307	<0.001
≥65	2.368	2.092–2.680	<0.001	2.526	2.071–3.082	<0.001
Year of diagnosis			0.153			0.775
2010-2015	Reference	Reference		Reference	Reference	
2016-2021	0.932	0.847–1.026	0.153	0.975	0.818–1.162	0.775
Race			<0.001			<0.001
White	Reference	Reference		Reference	Reference	
Black	1.505	1.350–1.677	<0.001	1.354	1.129–1.625	0.001
Others	0.846	0.724–0.988	0.035	0.740	0.587–0.933	0.011
Unknown	0.000	0.000–1.668E+37	0.853	0.000	0.000–6.517E+73	0.930
Primary Site			<0.001			<0.001
Endometrium	Reference	Reference		Reference	Reference	
Myometrium	1.693	1.508–1.899	<0.001	1.807	1.521–2.145	<0.001
Corpus uteri	1.590	1.337–1.890	<0.001	1.445	1.088–1.919	0.011
Uterus	1.835	1.623–2.075	<0.001	2.073	1.698–2.532	<0.001
Fundus uteri	1.577	1.323–1.879	<0.001	1.311	0.959–1.793	0.089
Others	1.354	0.893–2.054	0.154	1.489	0.815–2.722	0.195
Histology			<0.001			<0.001
Leiomyosarcoma	Reference	Reference		Reference	Reference	
Endometrial stromal sarcoma	0.446	0.397–0.500	<0.001	0.421	0.353–0.503	<0.001
Undifferentiated sarcoma	1.569	1.258–1.957	<0.001	1.191	0.828–1.712	0.346
Adenosarcoma	0.409	0.352–0.475	<0.001	0.375	0.304–0.463	<0.001
Tumor size			<0.001			<0.001
≤50mm	Reference	Reference		Reference	Reference	
>50mm	2.445	2.120–2.819	<0.001	2.480	2.006–3.066	<0.001
Unknown	1.888	1.589–2.243	<0.001	1.497	1.149–1.950	0.003
Grade			<0.001			<0.001
G1	Reference	Reference		Reference	Reference	
G2	1.390	1.005–1.923	0.046	1.075	0.676–1.708	0.761
G3/G4	7.841	5.949–10.336	<0.001	6.686	4.526–9.876	<0.001
Unknown	4.160	3.149–5.497	<0.001	3.704	2.497–5.496	<0.001

(*Continued*)

Table 2 (Continued).

Characteristics	Before PSM		P	After PSM		P
	HR	95% CI		HR	95% CI	
AJCC stage			<0.001			<0.001
I	Reference	Reference		Reference	Reference	
II	1.852	1.579–2.171	<0.001	2.039	1.609–2.585	<0.001
III	3.495	3.034–4.028	<0.001	3.331	2.675–4.147	<0.001
IV	4.843	4.349–5.392	<0.001	4.874	4.099–5.794	<0.001
Unknown	1.533	1.267–1.856	<0.001	1.489	1.031–2.149	0.034
Marital status			<0.001			<0.001
Married	Reference	Reference		Reference	Reference	
Single	1.293	1.181–1.416	<0.001	1.335	1.158–1.539	<0.001
Unknown	1.142	0.919–1.420	0.230	1.004	0.670–1.504	0.986
Para-Aortic Lymphadenectomy			0.137			0.080
No	Reference	Reference		Reference	Reference	
Yes	0.941	0.840–1.053	0.289	1.309	0.990–1.730	0.059
Unknown	1.273	0.948–1.708	0.108	1.356	0.858–2.142	0.192

specific mortality in patients who did not undergo PSM. Age ($p < 0.001$), histology ($p < 0.001$), tumor grade ($p < 0.001$), and AJCC stage ($p < 0.001$) were significant risk factors for tumor-specific mortality in patients who underwent PSM (Table 3).

Kaplan-Meier survival curve analysis indicated that patients aged 20–49 years exhibited a significant improvement in OS compared to those aged 50–64 years and ≥65 years, with median OS of NR (not reached), 66 months, and 43 months, respectively ($p<0.001$) (Figure 1A). Furthermore, patients with histological types of adenocarcinoma and endometrial stromal sarcoma demonstrated better prognosis than those with leiomyosarcoma and undifferentiated sarcoma, with

Table 3 Multivariate COX Hazard Ratio Regression Analysis of Tumor-Specific Survival in Uterine Sarcoma Before and After Propensity Matching

Characteristics	Before PSM		P	After PSM		P
	HR	95% CI		HR	95% CI	
Pelvic Lymphadenectomy			0.359			0.118
No	Reference	Reference		Reference	Reference	
Yes	0.946	0.841–1.065		0.890	0.768–1.030	0.118
Age, years			<0.001			<0.001
20-49	Reference	Reference		Reference	Reference	
50-64	1.524	1.359–1.710	<0.001	1.497	1.239–1.810	<0.001
≥65	1.999	1.760–2.270	<0.001	2.186	1.782–2.682	<0.001
Race			<0.001			0.043
White	Reference	Reference		Reference	Reference	
Black	1.307	1.169–1.461	<0.001	1.178	0.977–1.420	0.086
Others	0.912	0.780–1.066	0.247	0.788	0.623–0.996	0.046
Unknown	0.000	0.000–2.492E+33	0.833	0.000	0.000–1.366E+57	0.906
Primary Site			0.430			0.534
Endometrium	Reference	Reference		Reference	Reference	
Myometrium	0.892	0.767–1.037	0.138	0.848	0.668–1.075	0.174
Corpus uteri	0.973	0.806–1.174	0.773	0.938	0.688–1.278	0.685
Uterus	0.898	0.769–1.048	0.172	0.924	0.716–1.192	0.542
Fundus uteri	1.040	0.858–1.260	0.691	0.948	0.678–1.326	0.756
Others	1.044	0.682–1.596	0.844	1.453	0.786–2.688	0.234

(*Continued*)

Table 3 (Continued).

Characteristics	Before PSM		*P*	After PSM		*P*
	HR	95% CI		HR	95% CI	
Histology			<0.001			<0.001
Leiomyosarcoma	Reference	Reference		Reference	Reference	
Endometrial stromal sarcoma	0.726	0.621–0.849	<0.001	0.788	0.613–1.014	0.064
Undifferentiated sarcoma	1.429	1.087–1.879	<0.001	1.792	1.067–3.012	0.027
Adenosarcoma	0.654	0.547–0.782	<0.001	0.617	0.472–0.808	<0.001
Tumor size			<0.001			0.012
≤50mm	Reference	Reference		Reference	Reference	
>50mm	1.429	1.233–1.655	<0.001	1.380	1.105–1.722	0.004
Unknown	1.458	1.224–1.738	<0.001	1.185	0.905–1.554	0.218
Grade			<0.001			<0.001
G1	Reference	Reference		Reference	Reference	
G2	1.367	0.987–1.892	0.060	1.037	0.649–1.657	0.880
G3/G4	4.961	3.729–6.599	<0.001	4.163	2.771–6.254	<0.001
Unknown	3.096	2.322–4.127	<0.001	2.941	1.948–4.441	<0.001
AJCC Stage			<0.001			<0.001
I	Reference	Reference		Reference	Reference	
II	1.803	1.534–2.121	<0.001	1.946	1.522–2.488	<0.001
III	2.830	2.447–3.272	<0.001	2.458	1.953–3.093	<0.001
IV	3.676	3.282–4.118	<0.001	3.702	3.072–4.460	<0.001
Unknown	1.117	0.890–1.401	0.340	0.684	0.412–1.137	0.143
Marital status			<0.001			0.005
Married	Reference	Reference		Reference	Reference	
Single	1.243	1.133–1.365	<0.001	1.275	1.102–1.475	0.001
Unknown	1.255	1.009–1.563	0.042	1.059	0.704–1.594	0.783
Para-Aortic Lymphadenectomy			0.489			0.997
No	Reference	Reference		Reference	Reference	
Yes	0.966	0.839–1.111	0.625	0.992	0.745–1.322	0.958
Unknown	1.165	0.861–1.576	0.323	1.013	0.638–1.609	0.957

a median OS of NR, NR, 40 months, and 20 months, respectively ($p < 0.001$) (Figure 1B). Additionally, patients with G1 and G2 had significantly better prognoses than those with G3/4 and unknown grades (NR vs NR vs 67 months vs 25 months, $p < 0.001$) (Figure 1C). In addition, later stages were correlated with poorer outcomes (NR vs 91 months vs 51 months vs 23 months vs 16 months, $p < 0.001$) (Figure 1D).

The Impact of Pelvic Lymphadenectomy on the Prognosis of Patients with US

Kaplan-Meier survival curve analysis showed that there was no significant difference in survival between the two groups of patients before PSM (p=0.309) (Figure 2A). Kaplan-Meier survival curve analysis showed no difference in survival between the two groups of patients after PSM (p=0.431) (Figure 2B). Additionally, we conducted subgroup analyses of survival data based on age, pathological type, tumor size, tumor grade, tumor stage, and marital status after PSM. No statistically significant differences were observed in any of the subgroups analyzed for age categories (20–49 years, p=0.653; 50–64 years, p=0.798; ≥65 years, p=0.864) (Figure 3A-C), marital status (married, p=0.636; single, p=0.281) (Figure 3D-E), pathological types (leiomyosarcoma, p=0.416; endometrial stromal sarcoma, p=0.131; undifferentiated sarcoma, p=0.838; adenosarcoma, p=0.663) (Figure 4A-D), tumor size (≤50 mm, p=0.414; >50 mm, p=0.281) (Figure 5A and B), tumor grades (G1/G2, p=0.236; G3/4, p=0.433) (Figure 5C and D), and stage (I/II, p=0.425; III–IV, p=0.529) (Figure 5E and F).

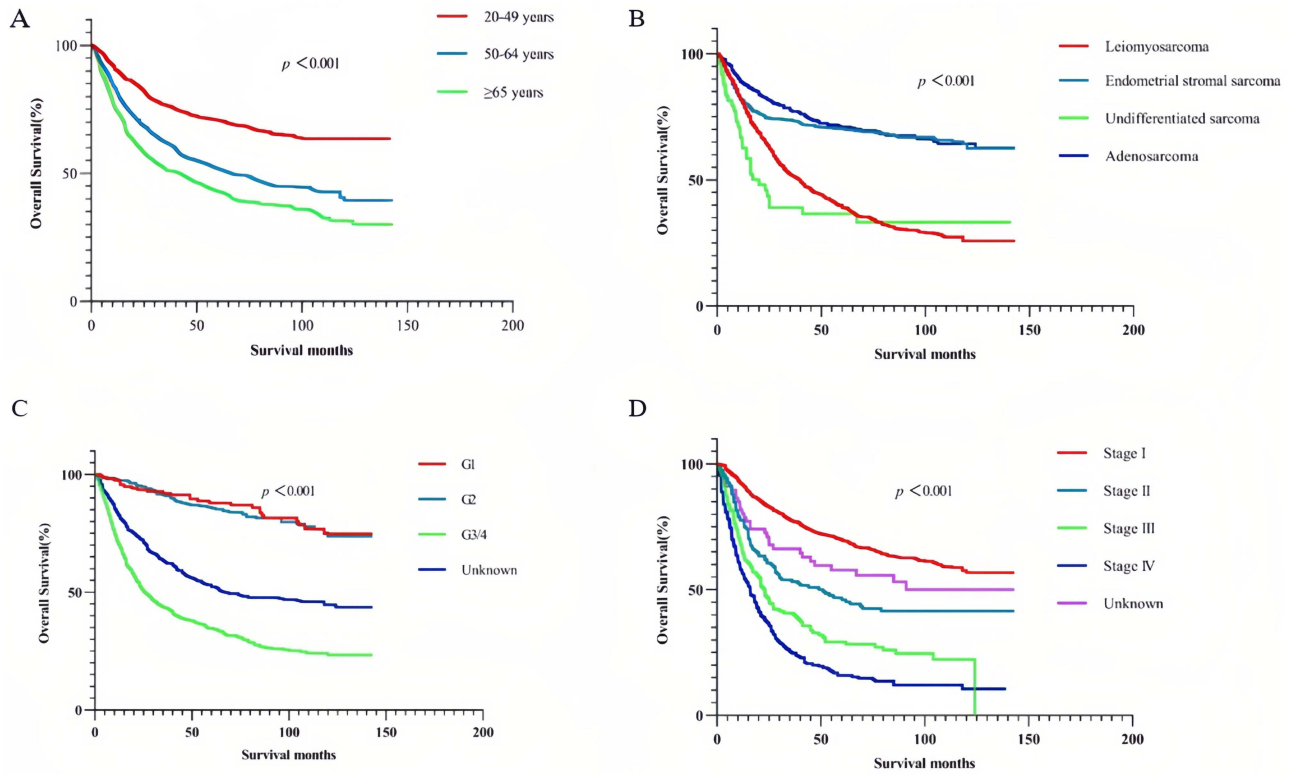

Figure 1 Kaplan-Meier survival curve analysis of overall survival based on age (**A**), histological types (**B**), pathological grade (**C**) and stage (**D**).

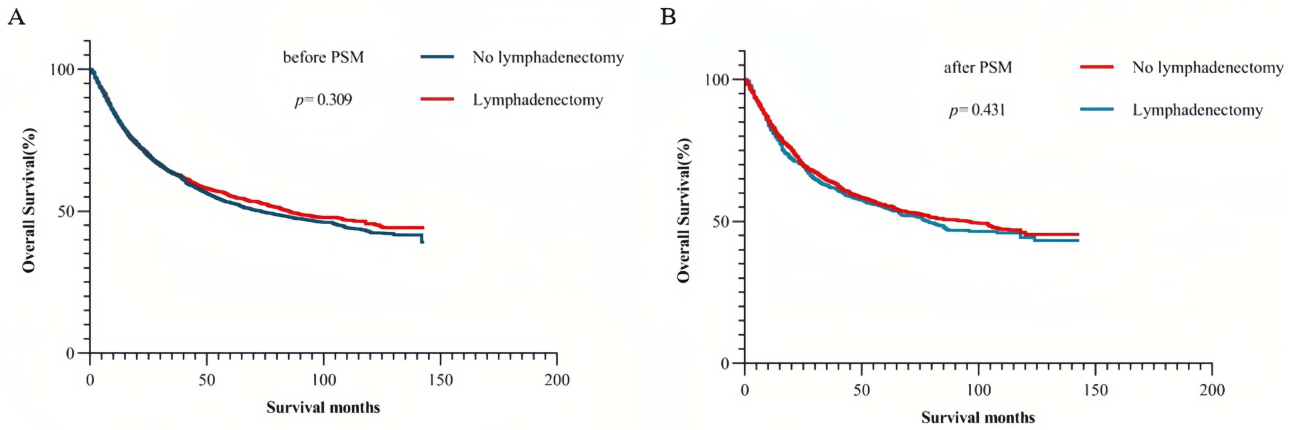

Figure 2 Kaplan-Meier survival curve analysis between pelvic lymphadenectomy group and non-pelvic lymphadenectomy group before PSM (**A**). Kaplan-Meier survival curve analysis between pelvic lymphadenectomy group and non-pelvic lymphadenectomy group after PSM (**B**).

Discussion

The incidence of US is low, and there are currently few large-scale studies that investigate the prognostic factors and the role of lymphadenectomy in its treatment. Our research indicated that age, histology, pathological grade, and AJCC stage were prognostic factors for tumor-specific mortality in patients with US. However, pelvic lymphadenectomy did not confer a survival benefit to patients undergoing US. The study included 4465 cases from the SEER database, including uterine leiomyosarcoma, endometrial stromal sarcoma, undifferentiated sarcoma, and adenocarcinoma. The findings revealed no survival advantage regardless of the pathological type. Furthermore, the subgroup analysis demonstrated that pelvic lymphadenectomy did not provide any survival benefits for patients.

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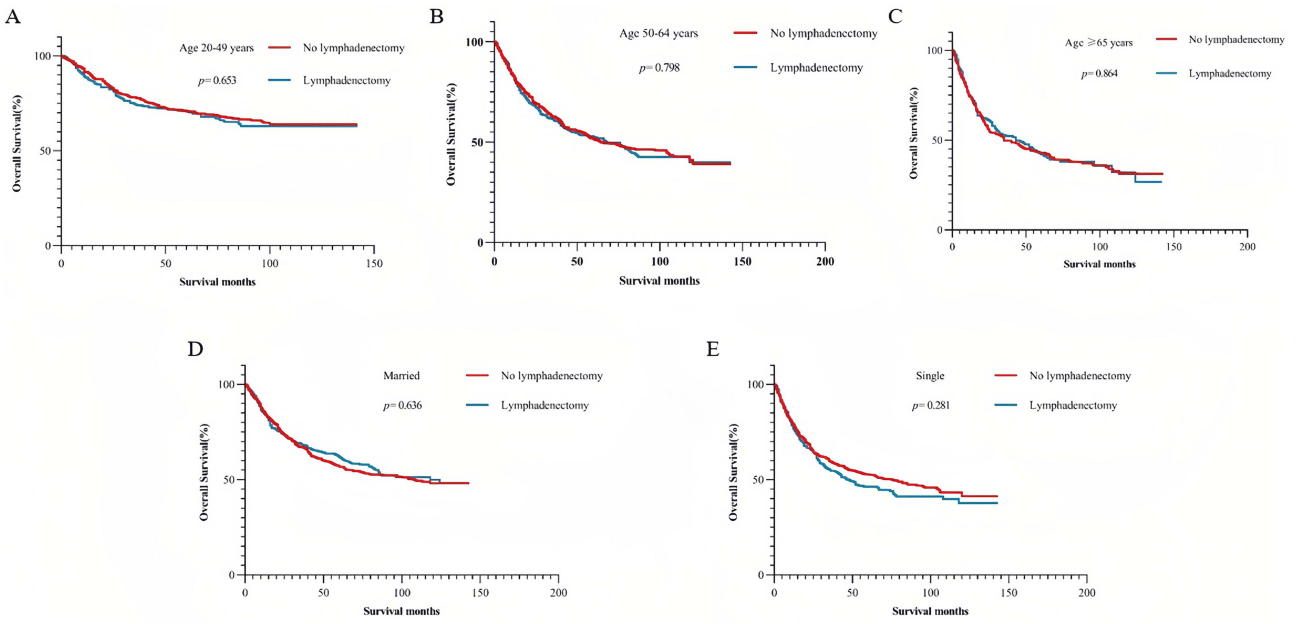

Figure 3 Subgroup analyses of survival data based on age (**A–C**) and marital status (**D** and **E**) after PSM.

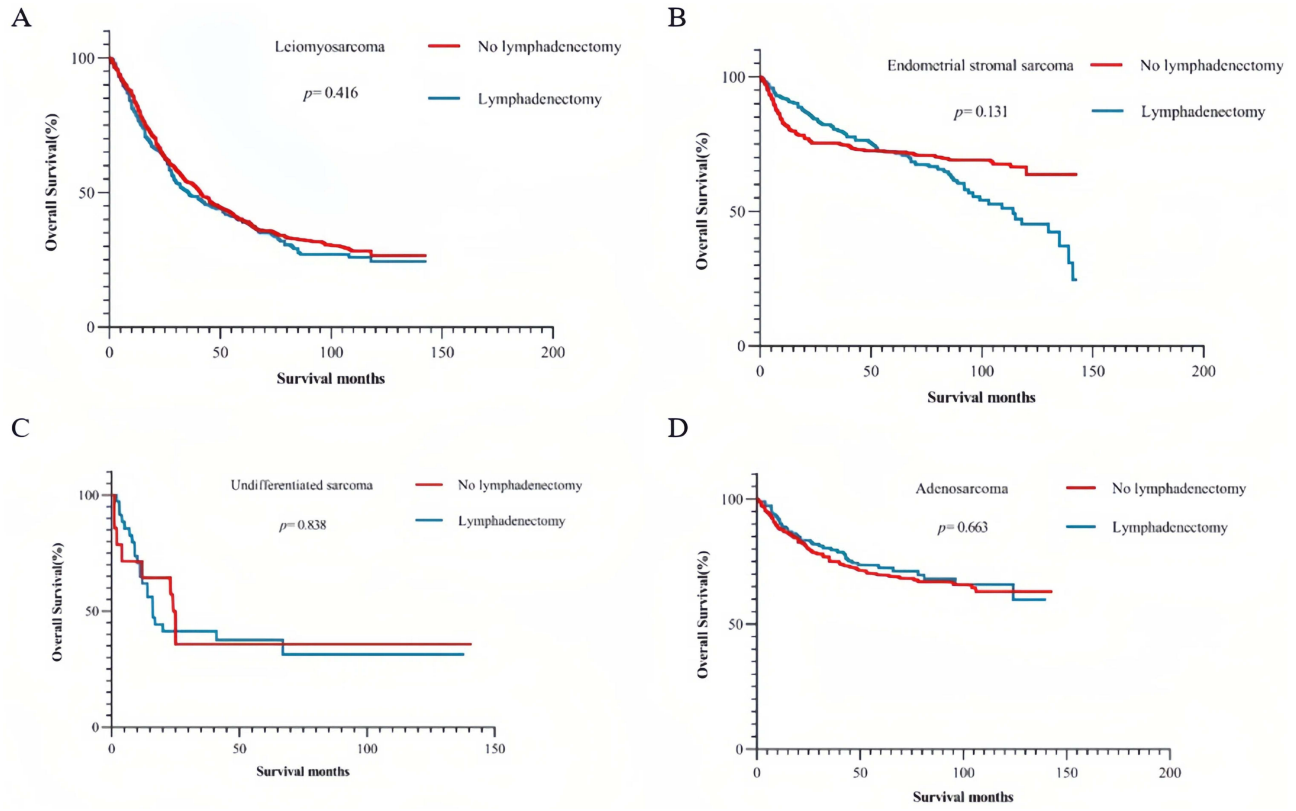

Figure 4 Subgroup analyses of survival data based on pathological types including leiomyosarcoma, endometrial stromal sarcoma, undifferentiated sarcoma and adenosarcoma) (**A–D**) after PSM.

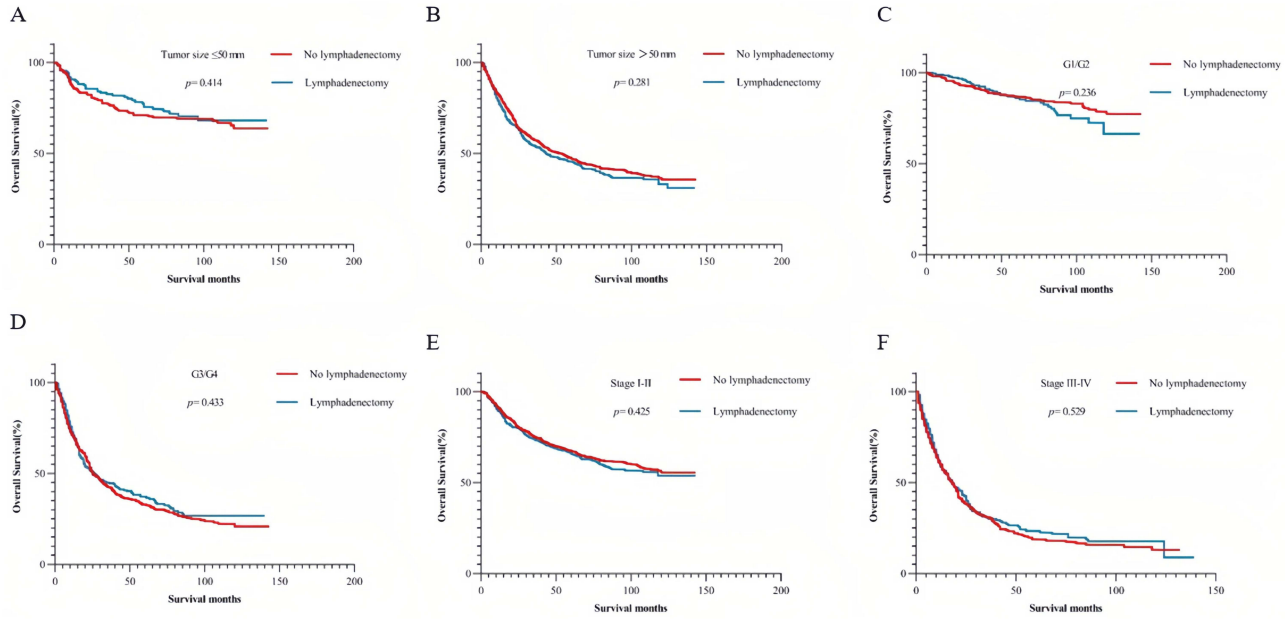

Figure 5 Subgroup analyses of survival data based on tumor size (**A** and **B**), tumor grades (**C** and **D**), and stage (**E** and **F**).

Currently, data regarding prognostic factors is relatively scarce. The primary reasons for this limitation are the small sample sizes in published literature and the heterogeneity of histopathological findings. Gadducci et al indicated that tumor stage, histological type and mitotic count were significantly associated with overall survival rates.[13] The study conducted by Zapardiel et al identified several factors that significantly influence the overall survival rate of uterine sarcomas, including incomplete surgical resection, persistent tumor presence, FIGO staging, extrauterine invasion, tumor margin involvement, and necrosis. Additionally, positive lymph vascular space invasion and adjuvant chemotherapy were found to be significantly associated with an increased risk of recurrence. Undifferentiated sarcoma and leiomyosarcoma exhibited poorer prognoses, whereas endometrial stromal sarcoma demonstrated the least aggressive behavior and the highest survival rates.[5] Nordal et al found that tumor stage, tumor grade, mitotic count, menopausal status, and tumor-free margin resection were independent prognostic factors in endometrial stromal tumors, which is similar to other studies.[14] Cabrera et al showed that age, FIGO stage, optimal surgery and histological type were significantly correlated with survival.[15] Our study found that the prognostic factors were similar to those reported in previous research. However, our investigation included a multi-center population with a larger sample size, providing further reference for clinical prospective studies.

However, the prognostic impact of pelvic lymphadenectomy in uterine sarcomas remains unclear. Shah et al reported that 26% of patients with low-grade endometrial stromal sarcoma underwent lymphadenectomy and that the incidence of lymph node metastasis was 7%. They found that lymph node metastasis had no significant effect on survival.[16] Nasioudis et al recently evaluated the role of lymphadenectomy in early stage uterine sarcomas. It was revealed that the incidence of lymph node metastasis was low and that lymphadenectomy did not confer survival benefits to patients with adenocarcinoma, low-grade endometrial stromal sarcoma, or leiomyosarcoma. However, lymphadenectomy in patients with high-grade endometrial stromal sarcoma or undifferentiated endometrial stromal sarcoma may lead to improved survival outcomes.[6] In addition, some researches revealed that lymphadenectomy can be therapeutic by removing involved nodes, especially with minimal disease burden.[17] Conversely, the finding of nodal metastasis necessitates consideration of more aggressive adjuvant therapies.[18] An alternative viewpoint posits that lymphadenectomy might impair disease control mechanisms, potentially leading to worse outcomes.[19]

Nevertheless, this study also had certain limitations. First, it was based on retrospective data from the SEER database, without including data from China. Second, because of the limited number of undifferentiated sarcoma cases available for analysis, instances classified as undifferentiated tumors were relatively few in number. Third, being a non-prospective study means that its evidence level is lower than that derived from prospective studies. Consequently, we plan to conduct multicenter prospective studies from China in the future to further validate whether our reported findings align with those obtained elsewhere.

The management of uterine sarcoma remains a subject of controversy, necessitating further research to clarify the definitive diagnostic and therapeutic approaches for both newly diagnosed patients and those with recurrent uterine sarcoma. Molecular and genomic analyses may aid in identifying patients at higher risk of recurrence. Furthermore, there is an urgent need for additional studies focusing on immune checkpoint inhibitors and targeted therapies to determine effective treatment strategies.[8]

Conclusions

In conclusion, our study demonstrated that patient age and histological type, grade, and stage were significantly associated with the prognosis of uterine sarcoma. Additionally, pelvic lymphadenectomy did not confer a survival benefit to patients with this disease.

Data Sharing Statement

The data used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Consent for Publication

All authors agree to the publication of the article.

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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Disclosure

The authors declare no competing interests in this work.

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