Complementary Role of 18F- FDG PET/CT for Sentinel Lymph Node Algorithm in Endometrial Cancer with High Risk Factors for Lymphatic Metastasis

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INTRODUCTION

Lymphatic spread rate in apparently uterine-confined endometrial cancer (EC) is approximately 20%. However, most cases undergo unnecessary lymphadenectomy and expose its morbidities. There is no definitive conclusion and clinical practices vary worldwide including lymphadenectomy only in cases with pre/intraoperative risk factors for lymphatic metastasis, routine systematic lymphadenectomy or sentinel lymph node (SLN) mapping. Mayo Clinic suggested an algorithm to stratify patients who should undergo systematic lymphadenectomy [1]. However, this triage is not enough to prevent the unnecessary lymphadenectomy exactly. 18F- FDG PET/CT has been investigated as a non-surgical approach for lymph node evaluation and despite its high negative predictive value, specificity is around only 50%. SLN mapping can decrease need of systematic lymphadenectomy with high diagnostic accuracy and it is suggested as an alternative approach by NCCN [2]. However, NCCN SLN algorithm focuses on pelvic lymph nodes and carries a risk for under diagnosis of paraaortic metastases due to evaluation of this area is left to surgeon's discretion and the main reason for false negativity of SLN algorithm was paraaortic metastasis [3].

In this study, we evaluated complementary role of preoperative 18F- FDG PET/CT scan in patients with high risk features for lymphatic metastasis who had undergone surgical treatment with intraoperative SLN mapping.

METHODS

Patients with endometrial cancer who underwent SLN algorithm with indocyanine green/near-infrared fluorescent imaging followed by at least bilateral pelvic lymphadenectomy between May 2017 and November 2018 were assessed for eligibility. According to final histopathology report, patients with at least one of the high-risk criteria according to Mayo Clinic Algorithm [1] and preoperative 18F- FDG PET/CT scan constituted study population. NCCN SLN algorithm for endometrial cancer was applied following intracervical ICG injection. Mapped SLNs were resected and any suspicious lymph node was removed regardless of mapping. Preoperative non-endometrioid histology, grade 3 endometrioid cancer on preoperative endometrial sampling, positive lymph nodes on preoperative 18F- FDG PET/CT scan or enlarged paraaortic nodes suspicious for malignancy and pelvic lymphatic metastasis detected by intraoperative frozen section evaluation were indications for paraaortic lymphadenectomy.

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RESULTS

38 patients (76 hemipelvises) were eligible for the analyses. Lymphatic metastasis was seen in 10 patients (26.3%) . Lymphatic metastasis was diagnosed by ultrastaging in 1 patient's 2 hemipelvises as ITCs. Pelvic metastases with or without paraaortic involvement were diagnosed in 8 patients including 11 hemipelvises (11/76: 14.4% of hemipelvises). 2 of these 8 cases had both pelvic and paraaortic involvement. There were 2 isolated paraaortic metastases. 8 of total 10 patients with lymphatic metastasis were diagnosed by SLN algorithm "mandatory steps", while 2 cases with isolated paraaortic metastasis were not diagnosed. 18F- FDG PET/CT was successful in diagnosis of 6 metastatic patients but not in 4. Sensitivity and negative predictive value of SLN algorithm "mandatory steps" were 80% and 93.4%, respectively.

Figure 1. Metastasis detection rate by 18F-FDG PET/CT

CONCLUSION

SLN algorithm with ultrastaging procedure has excellent diagnostic efficacy for pelvic lymph node metastases in endometrial cancer cases with high risk features for lymphatic metastasis. Although 18F- FDG PET/CT does not add any diagnostic benefit for pelvic lymph node metastases, it can exhibit the paraaortic node metastases. As the SLN algorithm steps mainly focus on the detection of pelvic lymphatic spread, 18F- FDG PET/CT can be used as a complimentary tool to exclude paraaortic nodal metastasis before using SLN algorithm in high risk cases. Otherwise paraaortic node metastases could not be diagnosed by using SLN algorithm alone.

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