Examining the Role of Preoperative Computed Tomography in Serous Uterine Cancers

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Background

Endometrial cancer is the fourth most common malignancy in women, with an estimated 46,470 diagnoses and 8,120 deaths in 2011.¹ Uterine papillary serous carcinoma (UPSC) is the most common subtype of Type 2 endometrial cancers. Despite only representing less than 10% of all endometrial cancers, UPSC accounts for up to 40% of deaths.²–⁵ Serum tumors are more aggressive and often have extraterine spread at the time of diagnosis.⁶

Computed tomography (CT) scans can be used to identify metastatic disease preoperatively. Although CT rarely alters management in patients with endometrioid histologies,⁷ patients with UPSC have tumors that behave more aggressively with a greater propensity for intra-abdominal spread and distant metastases.

Objective

To determine if a preoperative CT scan can accurately predict advanced disease in patients with serous uterine cancers and to perform a cost assessment of routine preoperative CT in this patient population.

Methods

A retrospective chart review was performed from January 1999 – December 2010 from the tumor registry records. Patients were included if they underwent a preoperative CT scan and underwent surgical staging. The preoperative CT scan was evaluated for presence or absence of ascites, pathologically enlarged lymph nodes (> 1 cm), omental metastasis and peritoneal implants. The surgical findings of malignant ascites, positive lymph nodes, omental metastasis and peritoneal implants were based on review of the operative note and surgical pathology. Cost assessment was based on published Medicare fee schedules for 2011 in New York, NY.

Results

326 patients were identified with serous uterine cancer: 116 UPSC and 210 mixed serous tumors. Of these, 58 patients had a preoperative CT scan and were included in the analysis. Preoperative CT suggested extrauterine metastatic disease in 25 patients (43.1%). The mean and median age was 65, and the majority of patients (91%) were black. The FIGO stage distribution favored advanced stage disease; 18 (32.8%) were Stage 1, 5 (8.6%) were Stage 2, and 17 (29.3% and 29.3%) patients were in each Stage 3 and Stage 4.

12 patients had CT findings of ascites, 7 had omental disease, 13 had lymph node involvement and 8 had peritoneal implants. On final pathology, 10 of the 12 (83.3%) patients with ascites had malignant cells on cytology. 5 of the 7 (71.4%) patients with omental disease on CT had metastasis on final pathology, 8 of 13 (61.5%) patients with CT findings suggestive of lymphadenopathy had positive lymph nodes. Only 4 of the 8 (50%) of patients with peritoneal implants had positive peritoneal biopsies on pathology or a notation in the operative report that there was gross peritoneal disease that was ablated. The preoperative CT also failed to recognize a number of malignant findings later identified on final pathology. This included 6 patients with omental metastases, 7 patients with peritoneal implants, 11 patients with positive lymph nodes and 4 patients with malignant ascites or pelvic washings.

Cost Assessment

The total reimbursement rate (facility and radiologist fees) for an abdominal and pelvic CT scan is $1,136.31. Assuming a positive rate of identifying extra-uterine spread at 24.1% which would alter patient management (ascites is excluded), 4.1 women would need to undergo CT scan to detect one abnormality at a cost of $4,658.87. When restricted to extra-nodal metastatic disease (10.3% - 9.7 women) the cost increases to $11,032.14. Assuming 10% of the uterine cancers yearly are serous, this would be an annual cost of $5,280,432.57 for routine imaging.

Conclusion

CT scan is very specific but less sensitive for advanced disease in patients with serous uterine cancers. CT scan may be beneficial preoperatively with regards to surgical planning for serous uterine cancers, but at significant cost.

References