**Objectives:** To determine if receipt of adjuvant treatment after surgical staging for high intermediate-risk endometrial cancer affects progression-free survival (PFS) or overall survival (OS) in women with recurrent disease.

**Methods:** After obtaining IRB approval, a multi-institutional retrospective cohort of women with recurrent endometrial cancer diagnosed between April 1999 and November 2016 was collected. Demographic information, operative reports, pathology reports, adjuvant treatment regimens, recurrence data, and date of death were abstracted from the patients' charts. Women who met criteria for high intermediate-risk disease as defined by GOG 99 (endometrioid histology grade 2-3, >2/3 myometrial invasion, lymphovascular space invasion; patients need ≥1 risk factor (RF) if age >70, ≥2 RF if age 50-69, 3 RF if age <50) were included in the analysis. Kaplan-Meier survival analysis was used to compare PFS and OS by treatment type without adjustment. A Cox proportional hazards analysis was also performed to assess how treatment was related to OS and PFS after adjustment.

**Results:** In the study, 63 patients met the inclusion criteria. Of these, 43 (68.2%) did not receive any adjuvant treatment and 20 (31.8%) received adjuvant therapy (radiation, chemotherapy, or a combination of both). Median PFS and OS were not statistically different between the two groups: PFS (16.9 vs. 18.8 months, $p=0.87$), OS (45.8 vs. 64.9, $p=0.57$). After adjusting for age, LVSI, grade, and depth of invasion, there was no difference in PFS (HR 1.51, 95% CI 0.65 – 3.53, p = 0.8072) or OS (HR 1.12, 95% CI 0.44 – 2.84, p=0.5702) between groups.

**Conclusions:** While adjuvant therapy for patients with high intermediate-risk endometrial cancer has been shown to improve PFS, it has never been shown to benefit OS, although many providers will still give adjuvant treatment. Our study suggests that in a real-world setting, even when limiting the analysis to just those patients that recur, adjuvant therapy did not offer a PFS or OS advantage over patients who did not receive any adjuvant treatment.

doi:10.1016/j.ygyno.2019.03.120

## Poster #16

### Fertility sparing management of endometrial hyperplasia with atypia and grade 1 endometrial cancer in young women

N. Rubin, M.A. Brewer, B. Whitcomb, K. Metersky. *University of Connecticut Health Center, Farmington, CT, USA*

**Objectives:** Endometrial cancer (EC) is the most common gynecologic malignancy in the United States, and obesity is more strongly associated with the development of EC than any other cancer in women. The increasing rate of obesity has led to an unprecedented increase in endometrial hyperplasia with atypia (AEH) and EC in reproductive age women, many of whom wish to maintain their fertility. The role of levonorgestrel (LNG) IUDs and GnRH agonists, alone and in combination, in the treatment of AEH and early stage EC, has been well studied. In this study, we assess the efficacy of a multimodal protocol combining a LNG-IUD, GnRH agonist, aromatase inhibitor, and metformin, to specifically address the dysfunctional metabolic and pro-inflammatory state, as well as the peripheral conversion of estrogen, seen in obese reproductive age women.

**Methods:** Retrospective case series of obese reproductive age women, with either AEH or Grade 1-2 EC, who were treated with our multimodal protocol at a single academic center from 2014 to 2019. Study participants underwent a baseline D&C followed by placement of a LNG-IUD, and initiation of a GnRH agonist and metformin. Once in a medically induced menopause, they were started on an aromatase inhibitor. Patients were also referred for nutrition and exercise counseling. Serial endometrial biopsies were done at 3, 6, and 9 months—and a D&C was done at 12 months. Outcomes included response rates to the protocol at each interval and fertility rates following treatment.

**Results:** Thirteen patients were treated with our multimodal protocol—8 had AEH (61.5%), 4 had Grade 1 EC (30.8%), and 1 had Grade 2 EC (7.7%). Almost half (46%) of these patients were referred by REI after being found to have endometrial pathology while undergoing work-up for infertility. Patient age ranged from 24 to 38, and BMI ranged from 32 to 60 (median 40). At the completion of the study, 11 patients had a complete response (85%) and 2 had progressed from AEH to Grade 1 EC (15%). Both of these patients underwent hysterectomy—one had Stage 1a Grade 1 endometroid EC and the other had AEH on final pathology. Patients were followed on average for 2.5 years following completion of treatment, and in this period 1 patient had a successful pregnancy. Three patients kept their LNG-IUD past 12 months and decided to delay childbearing in order to focus on improving their own health.

**Conclusions:** Our multimodal protocol combining a LNG-IUD, GnRH agonist, aromatase inhibitor, and metformin is highly effective in the treatment of AEH and Grade 1-2 EC in obese reproductive age women desiring fertility sparing management, when compared to the existing literature. While our multimodal protocol does facilitate uterine preservation, the women in our study likely face significant issues with fertility beyond their endometrial pathology, and the long-term fertility outcomes of these patients have yet to be determined.

doi:10.1016/j.ygyno.2019.03.121

## Poster #17

### Lymph node micrometastases in endometrial cancer: Treatment patterns and prognosis

A.A. Garrett[a], B.C. Orr[b], L. Hand[b], M. Radolec[a], M.B. Courtney-Brooks[b], J.L. Kelley III[b], J. Berger[b], S.E. Taylor[b]. [a]*University of Pittsburgh/Magee-Womens Hospital, Pittsburgh, PA, USA,* [b]*Magee-Womens Hospital of UPMC, Pittsburgh, PA, USA*

**Objectives**: Sentinel lymph node (SLN) mapping has recently emerged as a surgical technique with a high degree of accuracy in detecting metastases and is emerging as a replacement to full lymphadenectomy in the staging of endometrial cancer. Data from breast cancer suggest that small tumor deposits, including micrometasases (MM) and isolated tumor cells (ITCs) may have a negative impact on survival as compared to node negative cases. However, there is limited data regarding the clinical significance of MM and ITCs in endometrial cancer. The objectives of this study were to determine the incidence of lymph node MM and ITCs in stage IIIC endometrial cancer and to compare survival outcomes.

**Methods**: We identified all patients with stage IIIC endometrial cancer who had undergone a hysterectomy, bilateral salpingo-oophorectomy and lymphadenectomy from 2010 to 2017. Demographic, clinicopathologic, treatment and outcome data were collected through the Magee Tumor registry. MMs were defined as tumor within a lymph node measuring > 0.2mm but < 2.0mm, and ITCs were defined as tumor within a lymph node measuring 0.2mm. Data were compared using descriptive statistics, including t-tests, chi-square, and fisher exact, as applicable survival analyses was performed using Kaplan-Meier and Cox proportional hazard methods. All tests were two-tailed with threshold significance level set at $p<0.05$.

**Results**: Of the 152 patients identified, 101 (66.4%) had IIIC1 disease and 51 (33.6%) had stage IIIC2 disease. Mean age at diagnosis was 62 (37-85), and patients had a mean BMI of 32.3 (18.0-59.4). A majority

of patients (92.1%) were white. Eighty-four patients (81.4%) had lymph node macrometastases, 12 patients (11.7%) had MM, and 7 patients (6.8%) had ITCs. On univariate analysis, increasing tumor size, cervical involvement, increasing grade, type II histology, African American race, para-aortic involvement, and not using combination chemotherapy/radiation were associated worse survival ($p<0.05$). Predictors of lymph node involvement were increasing tumor size, depth of invasion, grade, and LVSI, but there was no predictor to distinguish MM/ITC from macrometastases. For depth of invasion <50%, size <2cm, no LVSI, there were no macrometastases or MM/ITC seen. Chemotherapy with radiation was the most common adjuvant regimen (chemo+RT - 78%, chemo only – 14%, RT only – 1%, none – 6%). No survival difference was seen in MM/ITC vs macrometastases ($p=0.79$).

**Conclusions**: The management of MM/ITC is unclear. We report that there is no predictor to distinguish macrometastases versus MM. Treatment, recurrence, and survival patterns did not differ significantly likely due to the majority of patients receiving combination therapy. Continued research is necessary to understand the impact of isolated MM/ITC to inform prospective study for treatment management of isolated MM/ITCs.

doi:10.1016/j.ygyno.2019.03.122

**Poster #18**

**The impact of adjuvant treatment in intermediate risk, Stage I endometrial cancer with somatic CTNNB1 mutation**

K.C. Kurnit[a], B. Fellman[a], S.S. Xie[a], J. Bowser[b], G.B. Mills[c], R. Broaddus[a]. [a]*The University of Texas MD Anderson Cancer Center, Houston, TX, USA,* [b]*The University of Texas Health Science Center at Houston, Houston, TX, USA,* [c]*Oregon Health and Science University, Portland, OR, USA*

**Objectives:** Somatic *CTNNB1* mutations have been associated with worse recurrence-free survival in low grade, early stage endometrial cancer patients. We hypothesized that the use of current adjuvant therapy strategies would improve survival outcomes in *CTNNB1* mutant early stage endometrial cancer patients.

**Methods:** Patients with Stage I endometrioid endometrial cancer who received care at our institution were included in this study. Demographic and clinical information were obtained by review of the electronic medical record. *CTNNB1* mutation status was determined using either next-generation sequencing panels or focused Sanger sequencing of exon 3 of the *CTNNB1* gene. Comparative statistics were used to compare baseline characteristics, and Kaplan-Meier product limit estimator was used to determine recurrence-free survival (RFS).

**Results:** 253 Stage I endometrial cancer patients were identified. Of these, 45 (18%) had *CTNNB1* mutations. In patients with low risk endometrial cancer (no LVSI, no or superficial myometrial invasion less than 50% myometrial thickness, grade 1-2) who did not receive adjuvant therapy, *CTNNB1* mutation status was not associated with significantly worse RFS (8.1 vs. 11.3 years, $p=0.64$). However, in patients with deep myometrial invasion and/or LVSI with any histologic grade ($n=71$), the presence of a *CTNNB1* mutation was associated with shorter RFS (2.4 vs 8.5 years, $p = 0.01$). Furthermore, those patients with somatic *CTNNB1* mutations who did not receive adjuvant therapy demonstrated the worst RFS (Table 1). Of the 5 patients with somatic *CTNNB1* mutations who received adjuvant therapy, all received radiation (3 brachytherapy only, 2 pelvic radiation and brachytherapy).

**Conclusions:** In Stage I endometrioid endometrial cancer patients with intermediate risk factors, treatment of patients whose tumors harbor *CTNNB1* mutations resulted in improved recurrence-free survival. Molecular characteristics including *CTNNB1* mutation status should be incorporated into adjuvant therapy treatment algorithms. Prospective trials such as PORTEC4a can help elucidate which adjuvant therapies are most beneficial.

doi:10.1016/j.ygyno.2019.03.123

**Poster #19**

**Hypermethylation testing to identify Lynch Syndrome in endometrial cancer patients: Is it worth it?**

K. Tyrie[a], L. Drury[a], K. Dumas[b], L. Amacker-North[a], K. Warsinske[a], R.W. Naumann[a], D.L. Tait[a], E.K. Crane[a], A.B. Drummey[a], J. Brown[a]. [a]*Levine Cancer Institute, Carolinas Medical Center, Charlotte, NC, USA,* [b]*Greenville Health System, Greenville, SC, USA*

**Objectives:** To determine if MLH1 promoter hypermethylation (HM) testing of endometrial cancer (EC) is a cost-effective triage strategy for Lynch Syndrome (LS) testing.

**Methods:** We constructed a decision analysis to compare cost-effectiveness of 3 screening strategies: (1) no immunohistochemistry (IHC) testing, with referral for genetic testing (GT) based on Bethesda criteria (BC) alone; (2) IHC alone with no HM testing, with referral for GT based on BC or abnormal IHC testing; or (3) IHC and reflex HM testing, with referral for GT based on BC or abnormal IHC testing with negative HM. To evaluate the cost associated with each strategy, data from all consecutive patients with primary EC treated by gynecologic oncologists within one system from 2013-2017 were used to populate the model. Pts were identified through the institutional cancer registry and departmental billing records; data was extracted from the medical record. Costs were obtained for each branch point at which reimbursement occurred. Cost/life years (LY) saved and cost/quality-adjusted (QA) LY were calculated for each testing option based on published insurance reimbursement rates, cost data, and institutional reimbursement data. Results were compared using a one-way ANOVA for the three screening strategies.

**Results:** We identified 1208 eligible pts. In our system, 282 pts had no IHC or HM; 876 pts had IHC but no HM; and 50 had IHC with reflex HM. Of the 282 pts with no IHC or HM, 33% of pts complied with GT when indicated and 1 case of LS was identified. In the second group of 876 pts with IHC but no HM, 698 pts had normal IHC and GT was indicated in 45 of these pts with 0 cases of LS identified. In the 178 pts with abnormal IHC, 100 pts were compliant with GT and 13 cases of LS were identified. In the last group of 50 pts with IHC and reflex HM, 1 had abnormal IHC without HM, and she underwent GT and had LS. Including downstream testing, the cost/case of LS identified with each modality was $4000, $24,178, and $17,000 respectively. The cost/QALY gained in each modality was $3235, $4895 and $3486 respectively. The percentage of pts referred for GT was 22%, 41%, and 22% respectively.

**Conclusions:** The cost/QALY gained for each of the 3 testing algorithms was acceptable. Although IHC +/- HM was more expensive than no IHC testing, the number of unnecessary GT visits was lower when reflex HM was incorporated. The optimal cost-effective triage strategy to detect LS in pts with EC that preserves the scarce resource of GT appears to be IHC with reflex HM testing.

doi:10.1016/j.ygyno.2019.03.124

**Poster #20**

**Endometrial cancers in BRCA1 or BRCA2 germline mutations carriers**

E. Smith, A.D.C. Paula, D. Mandelker, B. Weigelt. *Memorial Sloan Kettering Cancer Center, New York, NY, USA*