Hemoglobin A1c and the Relationship to Stage and Grade of Endometrial Cancer

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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] Type 1 endometrial cancer has endometrioid histology and has identifiable risk factors including hypertension, obesity, diabetes mellitus, nulliparity and anovulation.

Hyperinsulinemia and impaired glucose metabolism have been hypothesized to increase the risk of many cancers, including breast, genitourinary, and gastrointestinal.[2,3,4] In colon cancer, poor glycemic control, as measured by HgA1c, independently predicts a more aggressive clinical course.[3]

Objective

To determine if elevated HgA1c in patients surgically staged for Type I endometrial cancer is related to a higher stage or grade at the time of diagnosis.

Methods

A retrospective chart review was performed from January 2000 – June 2010 at three academic medical centers. Patients were included in the study if they were diagnosed with endometrioid adenocarcinoma of the uterus, had a hemoglobin A1c performed within the three months before surgery, and were completely surgically staged.

Results

618 patients were identified with endometrioid adenocarcinoma during the study period. Of these, 82 had an HgA1c measured within 3 months prior to surgery. The average age was 62 (range 34-86). Patients with Stage 1, Grade 1 carcinoma were significantly younger than patients with the same or higher stage, grade 2-3 tumors (age 57 vs 65; p =0.002). The overall average HgA1c is 6.69 (range 4.4 – 12.8). There was no statistical difference between HgA1c levels in early stage versus later stage cancers. There was no statistical difference between HgA1c levels in low grade versus high grade tumors. No significance difference was found when stratifying by stage and grade together, despite a trend of increased mean HgA1c across increasing stages and grades (Stage 1, grade 1 HgA1c mean 6.74 vs Stage 3-4, Grades 2-3 mean of 7.69).

Distribution of Patients by Stage and Grade of Endometrioid Adenocarcinoma

	Stage 1	Stage 2	Stage 3	Stage 4	Total
Grade 1	34 (41.5%)	1 (1.2%)	1 (1.2%)	0	36 (43.9%)
Grade 2	17 (20.7%)	5 (6.1%)	2 (2.4%)	0	24 (29.3%)
Grade 3	12 (14.6%)	4 (4.9%)	5 (6.1%)	1 (1.2%)	22 (26.8%)
Total	63 (76.8%)	10 (12.2%)	8 (9.8%)	1 (1.2%)	**82 (100%)**

Results

Distribution of HgA1C by Stage and Grade of Endometrioid Adenocarcinoma

	Stage 1	Stage 2	Stage 3 / 4	Total
Grade 1	M = 6.74 SD = 1.65	M = 6.8	M = 6.6	M = 6.74 SD = 1.61
Grade 2 / 3	M = 6.50 SD = 1.08	M = 6.07 SD = 0.56	M = 7.83 SD = 2.45	M = 6.64 SD = 1.45
Total	M = 6.63 SD = 1.41	M = 6.14 SD = 0.58	M = 7.69 SD = 2.33	M = 6.69 SD = 1.50

p > 0.05 for all analyses (range 0.06 – 0.78)

Conclusion

Elevated preoperative HgA1c does not appear to be related to a higher stage or grade at the time of diagnosis of endometrioid adenocarcinoma of the uterus.

References

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