Impact of Race and Age on Duration Between Surgery and Chemotherapy in Epithelial Ovarian Cancer

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Background

Epithelial ovarian cancer is one of the most lethal gynecologic malignancies, and individualized therapy presents a challenge to clinicians. Debulking surgery followed by platinum- and taxane-based chemotherapy is the current standard of care.[1] However, numerous studies have shown that not all patients receive this standard. Increased age[2,3] and non-white race[4,5] have been consistently associated with nonstandard therapy. These differences persist despite reports that both populations benefit from optimal debulking and chemotherapy.[2,3,4,5,6]

Recent studies have suggested that the time to start chemotherapy after surgery may impact survival outcomes, with a delay in treatment negatively impacting prognosis.[7,8,9] No studies have investigated demographic factors influencing a delay in initiating chemotherapy.

Objective

To determine if age or race impacts duration between surgery and initiation of chemotherapy in patients with epithelial ovarian cancer.

Methods

A retrospective chart review was performed from January 1999 - December 2010 from the tumor registry records at SUNY Downstate. Patients were included if the day of surgery and day of chemotherapy initiation was identified. Additional information regarding ER visits, readmission, surgical procedures and co-morbidities were also collected. Statistical analysis was performed using chi-square with Fisher exact and t-tests of unequal variances where appropriate.

Results

67 patients were identified with epithelial ovarian cancer. 54 (79.4%) required chemotherapy based on stage of disease. Of these, 7 patients had endometrioid, 8 mucinous and 39 papillary serous ovarian carcinoma by histology. 6 patients were excluded based on missing data, leaving 48 eligible for analysis. The overall duration between surgery and chemotherapy was 33 days (SD 9.0, range 11-122). The average patient age was 55.8 years.

With regards to age, 30 patients (62.5%) were age 60 or younger, 18 (37.5%) were older than 60. There was a significant difference in Charlson co-morbidity index with older patients more likely to have an index of 1 or greater. Older patients had significantly longer hospital stays after surgery. Older patients visited the ER and required readmission more frequently in the interval between surgery and chemotherapy when compared to younger patients. Even with these readmissions, with regards to age, there was no significant difference in interval between surgery and chemotherapy, or in rate of optimal debulking or additional debulking procedures.

Impact of Age on Interval Between Surgery and Chemotherapy

	Age <60	Age >60	Results
Days to Chemotherapy: *All Patients*	34.0 +/- 15/6	37.3 +/- 17.8	p= 0.53
Days to Chemotherapy: *Excluding re-op*	34.0 +/- 15.6	43.0 +/- 27.8	p= 0.47
ER Visits/ Readmissions	0	5	p= 0.02
Charlson Index (1 or greater)	2	6	p= 0.01
Suboptimal Debulking	3	1	p= 0.51
Additional Debulking	11	9	p= 0.33

Results

With regards to race, 12 patients were white, 36 were non-white (32 Black, 1 Asian, 3 Hispanic). There was no significant difference in age, Charlson co-morbidity Index, interval between surgery and chemotherapy or in rate of optimal debulking or additional debulking procedures between groups. However, when the patient requiring re-operation was excluded, there was a significant difference with white patients receiving chemotherapy earlier than non-whites.

Impact of Race on Interval Between Surgery and Chemotherapy

	White	Non-white	Results
Age	55.3 +/- 14.1	55.9 +/- 15.3	p= 0.89
Days to Chemotherapy: *All patients*	52.0 +/- 40.6	33.0 +/- 9.2	p= 0.14
Days to Chemotherapy: *Excluding re-op*	28.0 +/- 4.0	33.0 +/- 9.2	p= 0.01
Charlson Index (1 or greater)	1	7	p= 0.35
Suboptimal Debulking	1	7	p= 0.67
Additional Debulking	7	15	p= 0.38

Conclusion

Age was not a factor impacting the duration between surgery and chemotherapy in this patient population. Race alone may be a factor impacting the duration between surgery and chemotherapy and deserves further investigation.

References

1. Chase DM, Fedewa S, Chou TS, Chen A, Ward E, Brewster WR. Disparities in the allocation of treatment in advanced ovarian cancer: are there certain patient characteristics associated with nonstandard therapy? Obstet Gynecol. 2012 Jan;119(1):68-77.
2. Sundararaja V, Hershman D, Grann VR, Jacobson JS, Neugut AI. Variations in the use of chemotherapy for elderly patients with advanced ovarian cancer: A population-based study. J Clin Oncol. 2002; 20(1):173-8.
3. Wright, JK, Doan T, McBride R, Jacobson JS, HErshman DL. Variability in chemotherapy delivery for elderly women with advanced stage ovarian cancer and its impact on survival. Br J Cancer 2008; 98(7): 1197-203.
4. Terplan M, Temkin S, Tergas A, Lengyel E. Does equal treatment yield equal outcomes? The impact of race on survival in epithelial ovarian cancer. Gynecol Oncol 2008; 111: 173-8.
5. Terplan M, Schluterman N, McNamara EJ, Tracy JK, Temkin SM. Have racial disparities in ovarian cancer increased over time? An analysis of SEER data. Gynecol Oncol. 2012 Apr;125(1):19-24.
6. Chereau E, Ballester M, SElle F, Rouzier R, Darai E. Ovarian cancer in the elderly: impact of surgery on morticdity and survival. Eur J Surg Oncol. 2011; 37(6):537-42.
7. Larsen E, Blaakaer J. Epithelial ovarian cancer: does the time interval between primary surgery and postoperative chemotherapy have any prognostic importance? Acta Obstet Gynecol Scand. 2009; 88(4):373-7.
8. Mahner S. Staehle A, zu Eulenburg C, Wegscheider K, Reuss A, Pujade-Lauraine E, Harter P, Ray-Coquard I, Pfisterer J, du Bois A. Prognostic impact of the time interval between primary surgery and start of first-line chemotherapy in patients with advanced ovarian cancer: Analysis of prospective randomized phase III trials. J Clin Oncol 2009; 27: 15s.
9. Paulsen T, Kaern J, Kjaerheim K, Haldorsen T, Tropé C. Influence of interval between primary surgery and chemotherapy on short-term survival of patients with advanced ovarian, tubal or peritoneal cancer. Gynecol Oncol. 2006; 102(3): 447-52.