Extended Abstract

A predictive model for serous epithelial ovarian cancer chemo-response using clinical characteristics

Andreea M. Newtson, MD,[1] Rebecca K. Chung, MD,[1] Eric J. Devor, PhD,[1,2] Erin A. Salinas, MD,[1] Megan E. McDonald, MD,[1] Kristina W. Thiel, PhD,[1] Michael J. Goodheart, MD,[1,2] Kimberly K. Leslie, MD,[1,2] Brian J. Smith, PhD,[1,3] Jesus Gonzalez Bosquet, MD, PhD,[1,2]

Keywords: Ovarian cancer, serous epithelial ovarian cancer, chemotherapy, chemotherapy response, prediction model, clinical predictors, TCGA

Objectives

One of the prognostic factors most highly associated with ovarian cancer survival is response to initial chemotherapy. Current prediction models of chemo-response built with comprehensive molecular datasets, like The Cancer Genome Atlas (TCGA), could be improved by including clinical and outcomes data designed to study response to treatment. The objective of this study was to create a prediction model of ovarian cancer chemo-response using clinical-pathological features, and to compare its performance with a similar TCGA clinical model.

Methods

We first performed a retrospective case-control study of 359 patients with primary, high-grade, advanced-stage serous ovarian cancer treated at a single academic institution. Responders were defined as those patients whose disease disappeared after standard chemotherapy and did not recur for 6 months. Non-responders were defined as those with persistent disease or recurrence within 6 months of completing chemotherapy. A prediction model was created using a lasso (least absolute shrinkage and selection

[1]*Department of Obstetrics and Gynecology, Carver College of Medicine, University of Iowa Hospitals and Clinics, Iowa City, IA, 52242*
[2]*Holden Comprehensive Cancer Center, University of Iowa Hospitals and Clinics, Iowa City, IA, 52242*
[3]*Department of Biostatistics, University of Iowa College of Public Health, Iowa City, IA, 52242*

Please cite this abstract as: Newtson, AM Chung RK, Devor EJ, Salinas EA, McDonald ME, Thiel KW, Goodheart MJ, Leslie KK, Smith BJ, Gonzalez Bosquet J. A predictive model for serous epithelial ovarian cancer chemo-response using clinical characteristics. Proc Obstet Gynecol. 2018;8(1):Article 11 [2 p.]. Available from: http://ir.uiowa.edu/pog/ Free full text article.

Corresponding author: Andreea M. Newtson, Department of Obstetrics and Gynecology, University of Iowa, 200 Hawkins Drive, Iowa City, IA 42242, andreea-newtson@uiowa.edu

operator) regression analysis and included clinical variables associated with chemo-response. Performance was evaluated using the area under the curve (AUC) of the receiver operating curve and its 95% confidence interval (CI). This prediction model was compared to a similar model derived using clinical variables available in TCGA dataset for serous ovarian cancer.

Results

As expected, the strongest predictor of survival in the single-institution cohort was chemo-response (p=2x10-16). Factors independently associated with chemo-response were age, grade, optimal surgery, residual disease after surgery, and receipt of neoadjuvant chemotherapy. The performance of the prediction model yielded an AUC of 0.72 (95% CI of 0.69, 0.75). A similar clinical model from TCGA had an AUC of 0.53.

Presented at "Advances in Gynecologic Cancers," the University of Iowa Obstetrics and Gynecology Postgraduate conference, 10 November 2017, Marriott Coralville Hotel & Conference Center, Coralville, Iowa.