

Are supportive care-based treatment strategies preferable to standard chemotherapy in recurrent cervical cancer? ☆,☆☆

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HIGHLIGHTS

- Current cisplatin-based doublet chemotherapy in recurrent cervix cancer compromises quality of life and is associated with poor response rates.
- Patients with recurrent cervix cancer considered high-risk for treatment failure may benefit more from supportive care intervention than chemotherapy.
- Incorporating supportive care strategies and selective chemotherapy in recurrent cervix cancer may be more cost-effective than combination chemotherapy for all.

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ABSTRACT

Objective. Recurrent cervical cancer has a poor prognosis despite aggressive treatment. We evaluate the comparative-effectiveness of four management strategies in recurrent cervix cancer incorporating risk prognostication categories derived from pooled collaborative group trials: 1) standard doublet chemotherapy; 2) selective chemotherapy (home hospice with no chemotherapy for poorest prognosis patients with remainder receiving standard doublet chemotherapy); 3) single-agent chemotherapy with home hospice; and 4) home hospice.

Methods. A cost-effectiveness decision model was constructed. Survival reduction of 24% was assumed for single-agent chemotherapy and 40% for hospice only compared to standard doublet chemotherapy. Overall survival and strategy cost for each arm were modeled as follows: standard doublet chemotherapy 8.9 months (\$33 K); selective chemotherapy 8.7 months (\$29 K); single-agent chemotherapy with home hospice 6.7 months (\$16 K); and home hospice alone 5.3 months (\$11 K). Base case analysis assumed equal quality of life (QOL). Sensitivity analyses assessed model uncertainties.

Results. Standard doublet chemotherapy for all is not cost-effective compared to selective chemotherapy with an incremental cost-effectiveness ratio (ICER) of \$276 K per quality-adjusted life-year (QALY). Sensitivity analysis predicted that a 90% improvement in survival is required before standard doublet chemotherapy is cost-effective in the poorest prognosis patients. Selective chemotherapy is the most cost-effective strategy compared to single-agent chemotherapy with home hospice with an ICER of \$78 K/QALY. Chemotherapy containing regimens become cost-prohibitive with small decreases in QOL.

Conclusions. Supportive care based treatment strategies are potentially more cost-effective than the current standard of doublet chemotherapy for all patients with recurrent cervical cancer and warrant prospective evaluation.

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Introduction

Cancer of the uterine cervix is the fourth most common malignancy-related cause of death in women globally [1]. In the United States (US) 4030 deaths from cervix cancer are anticipated in 2013 [2,3]. Widespread screening for cervix cancer with Papanicolaou testing and high-risk Human Papilloma Virus (HPV) testing in the US has both significantly reduced the incidence of cervix cancer and allowed detection of cancer at earlier stages. Recurrent cervix cancer following an initial complete

response to treatment is especially resistant to standard therapies with response rates of only 30% and has a bleak prognosis [4].

Recurrent cervix cancer is usually incurable and patients generally have a poor response to chemotherapy. Multiple phase III collaborative group trials have been performed in an effort to identify a superior cytotoxic treatment regimen, with platinum-containing doublets generally considered the standard treatment regimen [5–7]. Recent literature suggests that patient-specific demographic and clinicopathologic variables significantly impact overall survival (OS) in recurrent cervix cancer, independent of chemotherapy [8]. Moore and colleagues analyzed data from three separate Gynecology Oncology Group (GOG) trials evaluating cisplatin-based chemotherapy regimens for recurrent cervix cancer and identified five poor prognostic factors significantly and independently associated with reduced OS (GOG performance status 1 or 2, pelvic recurrence, prior radiosensitizing chemotherapy, African American race, and first recurrence within one year of diagnosis) [8]. When four or more of these poor prognostic factors exist together, patients are at the highest risk for treatment failure (16% of patients in the analysis by Moore and colleagues) and have the poorest prognosis with OS of less than six months, even with aggressive combination cisplatin-based chemotherapy [8].

As recurrent cervix cancer is generally considered incurable and current chemotherapy regimens offer only modest gains in OS, particularly for patients with multiple poor prognostic factors, we explore using a decision analysis the effectiveness, cost, and quality of life (QOL) associated with both current and novel treatment strategies for patients with recurrent cervix cancer. Supportive care intervention through palliative care can be an adjunct to standard treatment regimens or represent the entire therapeutic intervention in the setting of hospice care [9]. Because prospective studies in other cancer types have demonstrated improved OS and QOL in patients randomized to standard treatment regimens that include early supportive care intervention through an outpatient palliative care paradigm, and at minimum hospice has not proven detrimental to survival in patients with gynecologic malignancies, we incorporate supportive care through home hospice into several of our novel treatment strategies [10–12]. Our model is designed to identify both the most effective and cost-effective among four modeled strategies for managing recurrent cervix cancer: 1) standard (cisplatin-containing) doublet chemotherapy for all patients; 2) selective chemotherapy (home hospice with no chemotherapy for poorest prognosis patients with remainder receiving standard doublet chemotherapy); 3) single-agent

chemotherapy with home hospice; and 4) home hospice care for all patients (no chemotherapy).

Methods

Model

A decision-analysis model was constructed using TreeAge Pro software (TreeAge Software Inc., Williamstown, MA) (Fig. 1) to evaluate four treatment strategies for patients with inoperable recurrent cancer of the uterine cervix who have received prior chemoradiation. The strategies included 1) standard (cisplatin-containing) doublet chemotherapy for every patient; 2) selective chemotherapy (home hospice with no chemotherapy for poorest prognosis patients – four or more poor prognostic factors as defined by Moore et al. – with remainder receiving standard doublet chemotherapy); 3) single-agent chemotherapy with home hospice care for all; and 4) home hospice care for all [8].

Patients receiving standard doublet chemotherapy were assumed to receive a cisplatin-containing doublet, necessary imaging, hospitalizations, and any other required healthcare associated with treatment. For the single-agent chemotherapy with home hospice strategy, patients were assumed to receive outpatient single-agent carboplatin at AUC of 6 in conjunction with home hospice care. Assumptions were made that patients on this strategy would not undergo imaging or hospitalizations, but would receive full home-based supportive care similar to the home hospice only strategy. Carboplatin rather than cisplatin was chosen for its favorable toxicity profile and presumed equivalency to cisplatin [13]. Patients assigned to the home hospice strategy only received home hospice and did not receive treatment, imaging, or hospitalizations. Patients assigned to the selective chemotherapy strategy received treatment equivalent to the standard doublet chemotherapy strategy only if they were not the poorest prognosis patients; those patients considered to have the poorest prognosis (four or more poor prognostic factors as defined by Moore et al.) received care identical to the home hospice strategy [8]. QOL and costs incurred were applied to each strategy in the model. Effectiveness was measured as quality-adjusted life year (QALY). A third party payer perspective was used.

Strategies were compared with regard to life expectancy, QOL, and costs using an incremental cost effectiveness ratio (ICER) and results were presented using costs per QALY. ICER is a numerical value indicating how much it would cost to gain a unit of effectiveness and

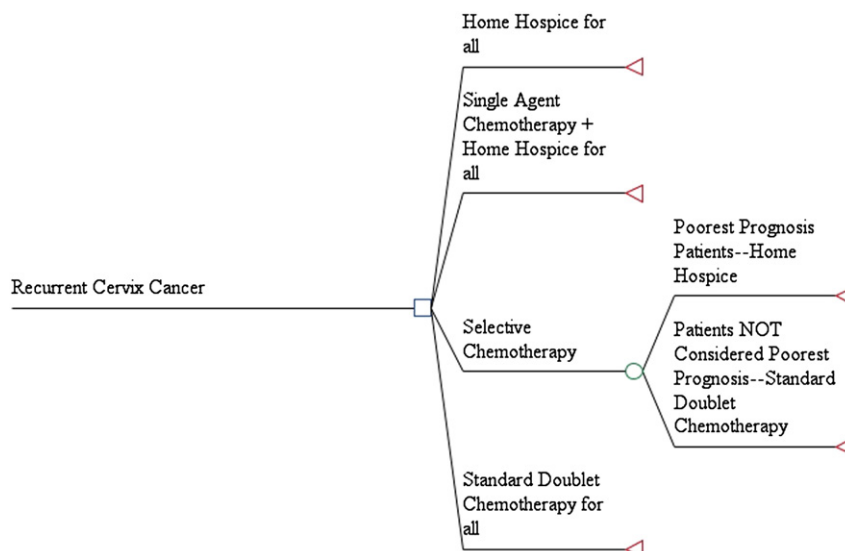


Fig. 1. Model schematic.

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