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A comparison of the toxicity and tolerability of two intraperitoneal chemotherapy regimens for advanced-stage epithelial ovarian cancer

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HIGHLIGHTS

- Randomized controlled trials have demonstrated significant survival benefits with intraperitoneal cisplatin.
- Intraperitoneal carboplatin has less gastroinstinal, neurologic and hematologic toxicities than intraperitoneal cisplatin
- High quality studies are evaluating the role of intraperitoneal carboplatin in optimally cytoreduced advanced ovarian cancer.

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ABSTRACT

Objectives. Randomized controlled trials (RCTs) in optimally cytoreduced epithelial ovarian cancer (EOC) patients have demonstrated an impressive survival benefit of intraperitoneal (IP) platinum over intravenous (IV), but its use has been limited by significant toxicity from cisplatin. The aim of this study was to compare the toxicity and tolerability of IP cisplatin to IP carboplatin in women with optimally cytoreduced EOC.

Methods. Retrospective analysis of 141 women with EOC who underwent optimal surgical cytoreduction followed by IV paclitaxel and IP cisplatin or IP carboplatin was performed. Toxicities of the two treatment regimens were compared. As a secondary outcome, overall survival (OS) and progression-free survival (PFS) probabilities were obtained using the Kaplan–Meier estimate; the log-rank test was used to compare survival curves.

Results. Of the 141 patients, 77 (54.6%) received IP cisplatin and 64 (45.4%) received IP carboplatin. Eighty-six percent received at least 4 cycles of IP chemotherapy. IP cisplatin was associated with significantly more grade 3 nausea and vomiting (10.4% vs 1.6%, $p = 0.033$), grade 3 neuropathy (7.8% vs 0%, $p = 0.013$) and grade 2–3 neutropenia (22.1% vs 9.4%, $p = 0.042$). No difference in PFS ($p = 0.602$) or OS ($p = 0.107$) was found between the groups.

Conclusion. IP chemotherapy had a high completion rate in both groups of patients. IP carboplatin required a less resource intense protocol and was tolerated better than IP cisplatin with less gastrointestinal, neurologic and hematologic toxicities.

1. Introduction

Epithelial ovarian cancer (EOC) is the leading cause of gynecologic cancer related-death in developed countries [1]. The 5-year overall survival (OS) is poor ranging from 30 to 40% as patients often present at an advanced-stage of the disease [2]. The standard treatment for advanced-stage EOC is a combination of cytoreductive surgery followed by platinum- and taxane-based chemotherapy; however the optimal route of administration remains controversial. Multiple randomized controlled trials have demonstrated an impressive survival benefit with intraperitoneal (IP) cisplatin in comparison to intravenous (IV) administration of platinum based regimens in optimally cytoreduced (<1 cm residual disease) advanced-stage ovarian cancer patients [3,4,5]. The instillation of IP cisplatin directly into the peritoneal cavity can enhance its effect by exposing the malignant cells to a high concentration of drug for an extended period of time therefore achieving a "local AUC" (area under the curve) that is greater than can be tolerated when the drug is administered systemically [5,6]. Grade 3 and 4 hematologic and nonhematologic toxicities including myelosuppression, nausea and vomiting, neuropathy, and abdominal pain are more

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