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ASO Author Reflections: Predicting Hyperthermia and Its Effect in Patients with Peritoneal Surface Malignancies

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PAST

In the absence of surgical treatment, the prognosis of patients with peritoneal surface malignancies is dismal.¹ Intraperitoneal hyperthermia can improve the pharmacologic profile of chemotherapeutic agents and increase their cytotoxicity.² Despite the worldwide adoption of hyperthermic intraperitoneal chemotherapy (HIPEC), there is a lack of uniformity in the formulation of HIPEC protocols.³ While elevated intraperitoneal temperatures have potential oncologic benefits, hyperthermia is not without risks. In fact, core-body hyperthermia has been associated with worse postoperative outcomes.⁴

PRESENT

In this study, we analyzed a cohort of 214 patients undergoing cytoreductive surgery and HIPEC, of whom 53.27% developed at least mild degrees of bladder hyperthermia (≥ 38 °C).⁵ Our multivariable logistic regression model indicated that age, sex, body mass index, and type of chemotherapy were independent prognostic factors of mild hyperthermia. In addition, duration of chemotherapy and blood transfusions were independent prognostic factors for moderate-to-severe hyperthermia (≥ 39 °C).

Unlike other studies, our data do not support the notion that hyperthermia is associated with a higher incidence of 30-day postoperative complications. This may be explained by our low incidence (6.54%) of moderate-to-severe hyperthermia, presumably reducing unintended tissular damage. On the contrary, patients who failed to achieve at least mild bladder hyperthermia had worse recurrence-free survival (hazard ratio [HR] 1.590, 95% confidence interval [CI] 1.027–2.463; $p = 0.038$) and overall survival (HR 2.626, 95% CI 1.042–6.622; $p = 0.041$). These findings represent an early clinical indication that hyperthermia improves the prognosis of patients undergoing HIPEC.

FUTURE

Whether hyperthermia alone influences the oncological outcome of patients with peritoneal surface malignancies remains to be confirmed in rigorous trials. Specifically, we need studies that test specific thresholds and durations of treatment, such as our observed finding of at least 30 min of mild bladder hyperthermia. As we move into an era of precision medicine, the results of such studies can help redefine the HIPEC protocols, improve the quality of chemoperfusion, and reduce the risk of adverse events linked to hyperthermia.

DISCLOSURES Carlos E. Guerra-Londono, Pascal Owusu-Agyemang, German Corrales, Marina M. Rofaeil, Lei Feng, Keith Fournier, and Juan P. Cata declare they have no conflicts of interest.

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