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Long-Term Survival Outcomes of Cancer-Directed Surgery for Malignant Pleural Mesothelioma: Propensity Score Matching Analysis

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Abstract

Purpose

Small observational studies have shown a survival advantage to undergoing cancer-directed surgery for malignant pleural mesothelioma (MPM); however, it is unclear if these results are generalizable. Our purpose was to evaluate survival after treatment of MPM with cancer-directed surgery and to explore the effect surgery interaction with chemotherapy or radiation therapy on survival by using the National Cancer Database.

Patients and Methods

Patients with microscopically proven MPM were identified within the National Cancer Database (2004 to 2014). Propensity score matching was performed 1:2 and among this cohort, a Cox proportional hazards regression model was used to identify predictors of survival. Median survival was calculated by using the Kaplan-Meier method.

Results

Of 20,561 patients with MPM, 6,645 were identified in the matched cohort, among whom 2,166 underwent no therapy, 2,015 underwent chemotherapy alone, 850 underwent cancer-directed surgery alone, 988 underwent surgery with chemotherapy, and 274 underwent trimodality therapy. The remaining 352 patients underwent another combination of surgery, radiation, or chemotherapy. Thirty-day and 90-day mortality rates were 6.3% and 15.5%. Cancer-directed surgery, chemotherapy, and radiation therapy were independently associated with improved survival (hazard ratio, 0.77, 0.74, and 0.88, respectively). Stratified analysis revealed that surgery-based multimodality therapy demonstrated an improved survival compared with surgery alone, with no significant difference between

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surgery-based multimodality therapies; however, the largest estimated effect was when cancer-directed surgery, chemotherapy, and radiation therapy were combined (hazard ratio, 0.52). For patients with the epithelial subtype who underwent trimodality therapy, median survival was extended from 14.5 months to 23.4 months.

Conclusion

MPM is an aggressive and rapidly fatal disease. Surgery-based multimodality therapy was associated with improved survival and may offer therapeutic benefit among carefully selected patients.

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