Selecting the Right Tool for the Right Job: Which Response Criteria Better Predicts Survival of Patients Treated with Transarterial Radioembolization?

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Viable tumor size-based criteria (modified RECIST and EASL criteria) have demonstrated good correlation with overall survival in patients receiving TACE. For conventional or drug-eluting bead TACE, the EASL and modified RECIST criteria correlated better with overall survival than did RECIST 1.1 criteria. Clinical guidelines have recommended using modified RECIST criteria to assess response to locoregional therapy in HCC. However, these criteria have not been thoroughly investigated for transarterial radioembolization (TARE), a newer method of transarterial therapy.

In this issue of Gut and Liver, Lee et al. compared the RECIST 1.1 and modified RECIST criteria to predict overall survival in patients with HCC receiving TARE. The modified RECIST criteria successfully predicted better overall survival, whereas the RECIST 1.1 criteria failed to demonstrate any correlation with survival outcomes. Responders who had a complete response or partial response according to modified RECIST criteria at 1 month or 3 months after TARE exhibited significantly better survival than non-responders. The best response, defined as the most favorable response during the first 6 months after TARE, also predicted longer survival when using modified RECIST criteria.

Successful radioembolization will eventually induce tumor shrinkage; therefore, whole tumor size-based criteria (WHO and RECIST 1.1 criteria) would ultimately be helpful for predicting survival outcome. However, these criteria can take up to 4 to 6 months to capture tumor response since tumor shrinkage occurs slowly following TARE. Moreover, treatment-related intratu...
moral hemorrhage, peritumoral edema, and necrosis can induce a paradoxical increase in tumor size, which may confound accurate response evaluation. By contrast, viable tumor size-based criteria can identify responders earlier (at 2 to 3 months following TARE) and better discriminate individuals with longer survival. Adopting whole tumor size-based criteria instead of viable tumor size-based criteria may have contributed to failure to demonstrate a correlation between tumor response and overall survival in large phase III clinical trials of TARE. One limitation of viable tumor size-based criteria is that they may overestimate tumor response because hyperattenuating lipiodol deposition during conventional TACE may mask viable portions of tumor. However, TARE uses a radioactive isotope instead of an emulsion of chemotherapeutic agent and lipiodol. Another limitation of viable tumor size-based criteria is intra- and interobserver variability. Although both intra- and interobserver variability have been reported as acceptable for HCC treated with TARE, this variability necessitates caution when interpreting treatment response. Furthermore, viable tumor size-based criteria require an optimized and consistent imaging protocol to obtain high-quality enhancement images. Inappropriate arterial phase imaging can hamper accurate evaluation of enhancing lesions.

As with other transarterial therapies, it is apparent that the modified RECIST criteria outperform RECIST 1.1 criteria for predicting patients most likely to benefit from TARE. However, optimization of image quality and reproducibility are necessary to overcome potential limitations.

CONFLICTS OF INTEREST

No potential conflict of interest relevant to this article was reported.

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