Bridging and Downstaging in HCC: Role of TACE vs. TARE in Transplant Eligibility

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Background

Hepatocellular carcinoma (HCC) accounts for the majority of primary liver cancers, resulting in 830,000 deaths annually. It is the third most common cause of cancer mortality worldwide.

Transarterial chemoembolization (TACE) and transarterial radioembolization (TARE) can be used as a bridge to transplantation in patients with hepatocellular carcinoma (HCC) who are initially ineligible for liver transplant (LT) due to tumor size, number, or location.

Purpose : This exhibit explores the comparative indications and outcomes of both TACE and TARE in bridging and downstaging HCC for transplant eligibility

Methods

A systematic review of PubMed literature analyzed patient selection, HCC characteristics, and oncological outcomes of TARE and TACE for downstaging or bridging in liver transplantation (LT).

Salem et al. studied 179 patients with BCLC stage A or B HCC, randomized to Y90 (n=24) or cTACE (n=21), with time to progression (TTP) as the primary outcome, and safety, tumor response, and survival as secondary outcomes, using intention-to-treat, inverse probability of censoring weighting, and competing risk models.

The ultimate intent of treatment for these patients was liver transplantation with candidacy evaluated by transplant surgery.

Mehta et al. prospectively evaluated 209 consecutive HCC patients undergoing downstaging based on UNOS-DS criteria from 2016–2019.

Results

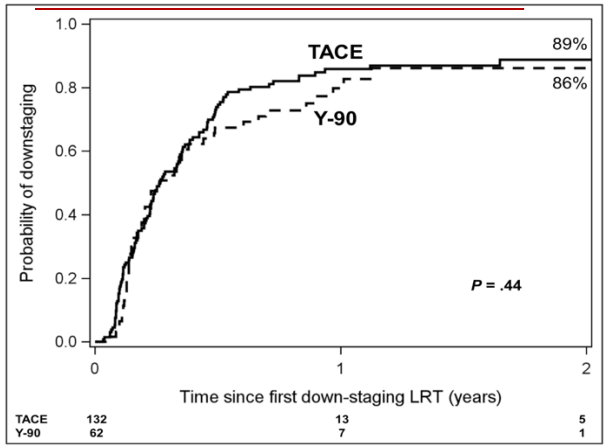

Figure 1: Adapted from Mehta et al. Kaplan-Meier probability of successful down-staging by type of first local-regional therapy (TACE versus Y-90)

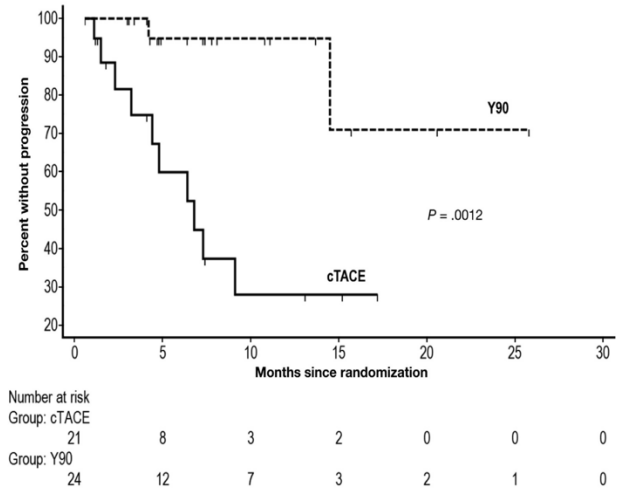

Figure 2: Adapted from Salem et al. Kaplan-Meier probability of successful down-staging by type of first local-regional therapy (TACE versus Y-90)

- Mehta et al. found similar efficacy of TACE and Y-90 as initial down-staging treatment. There was no statistically significant differences were observed in probability of or time to successful down-staging. **(Figure 1)**
- Y-90 was found to prolong tumor tissue perfusion (TTP) compared to cTACE in early intermediate-stage HCC, indicating more effective treatment of targeted lesions and tumor control **(Figure 2).** However, this longer TTP did not correlate with increased overall survival (OS), suggesting that local control alone is insufficient for survival improvement in cirrhotic patients with competing mortality risks
- Salem et al. reported that the median survival time, censored to liver transplantation, was 17.7 months for the cTACE group and 18.6 months for the Y-90 group, with no significant difference (P = .99) (**Figure 3).** Transplantation rates were 87% for Y-90 and 70% for cTACE, with median times to transplant of 7.6 months and 8.8 months, respectively.

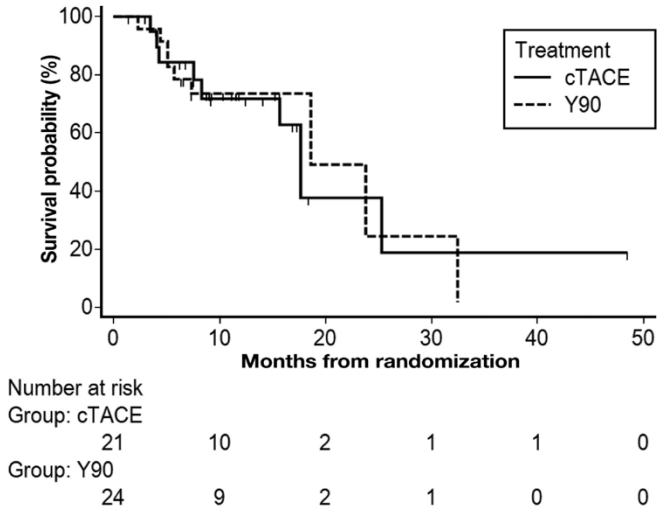

Figure 3: : Adapted from Salem et al. Overall survival of randomization censored to liver transplantation

Conclusion

The longer time to LT observed with TARE may allow for better tumor biology assessment and patient selection, ultimately optimizing post-transplant outcomes.

However, until a large multi-center randomized trial comparing Y-90 and TACE is conducted, the choice between these modalities as initial down-staging treatment will depend on center expertise and remain a matter of debate.

Future directions: Newer studies will need refine selection criteria, incorporate tumor biology biomarkers, and assess long-term post-transplant outcomes to inform personalized treatment strategies.

References

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