

Contraindications and Safety Pitfalls in TARE: How to Optimize Outcomes in Complex Liver Anatomy

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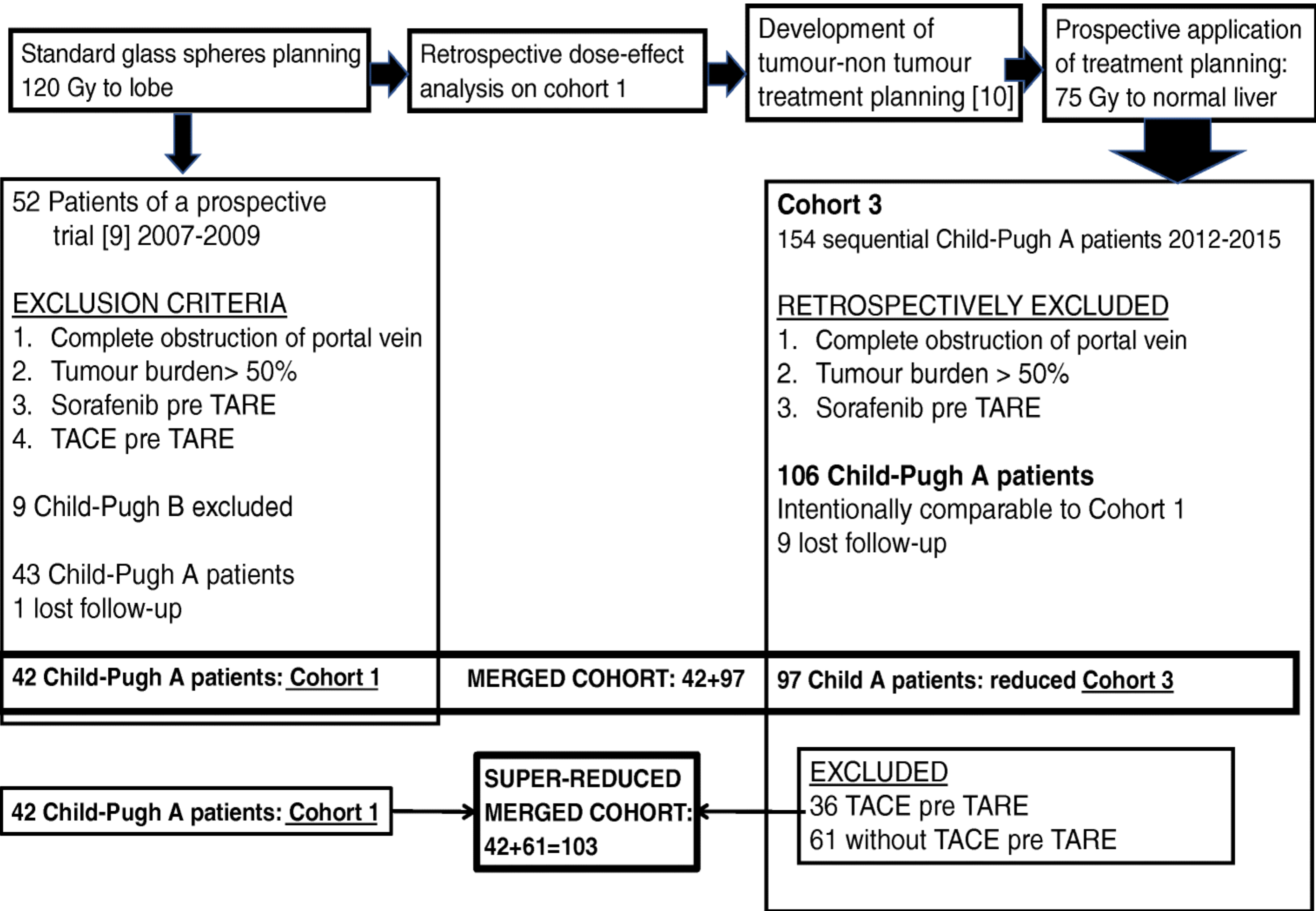
Introduction

- Transarterial radioembolization (TARE) is a historically effective treatment for unresectable hepatocellular carcinomas (HCC).
- Awareness of complex liver anatomy is necessary to avoid procedural complications such as non-target embolization, radiation-induced liver disease, and destruction of non-hepatic tissue.
- We sought to understand the contraindications, safety pitfalls, and optimization protocols of TARE therapy to maximize outcomes in complex liver anatomy.

Methods

- A review of literature regarding TARE including case reports, summary articles, retrospective cohort studies, and systematic reviews in PubMed was undertaken.
- Studies specifically regarding optimization of TARE procedural steps were emphasized.²

Figure 1: Merged Cohort Study Design²



Results

Figure 2: Normal Tissue Complication Probability Stratification²

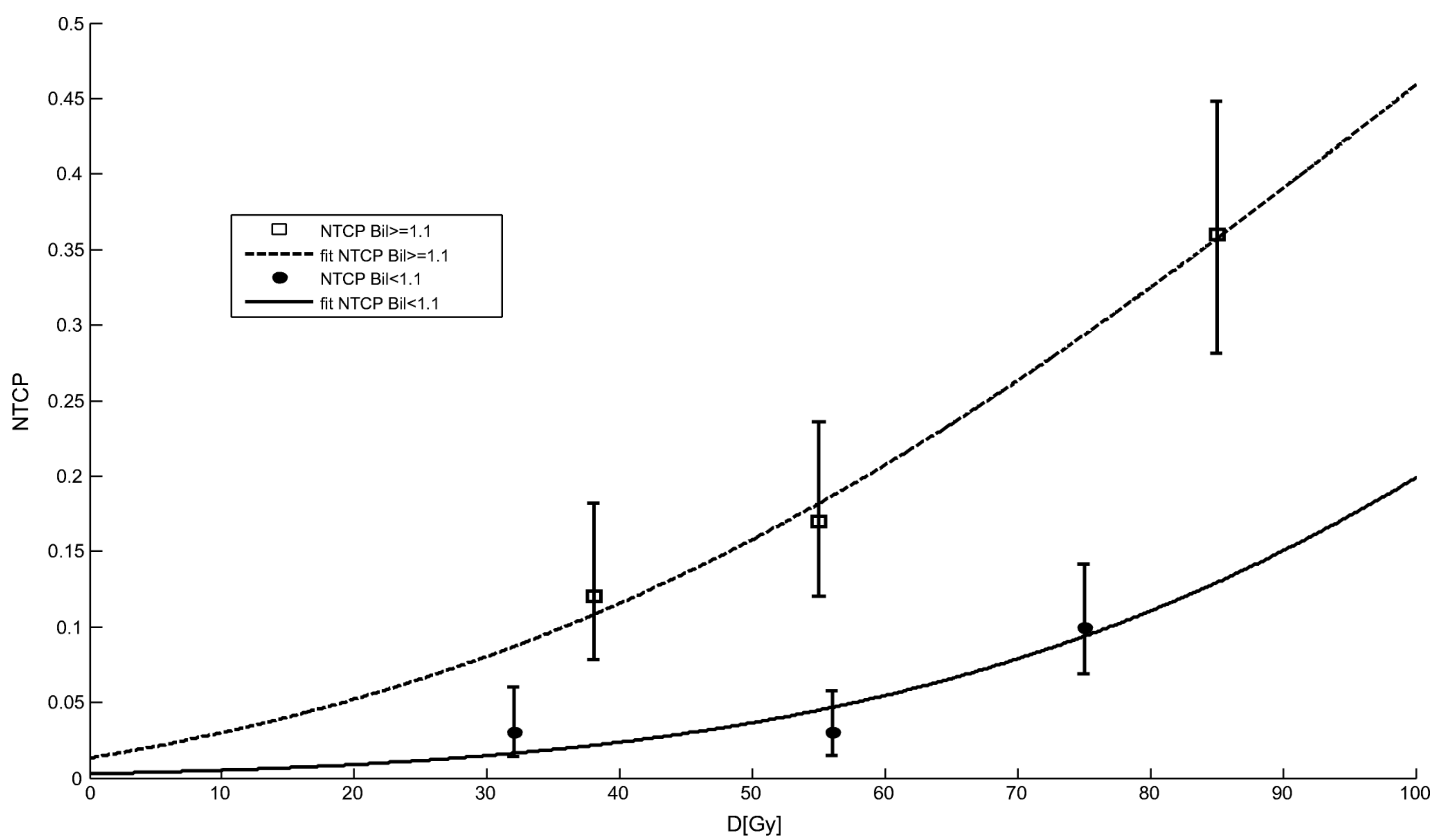
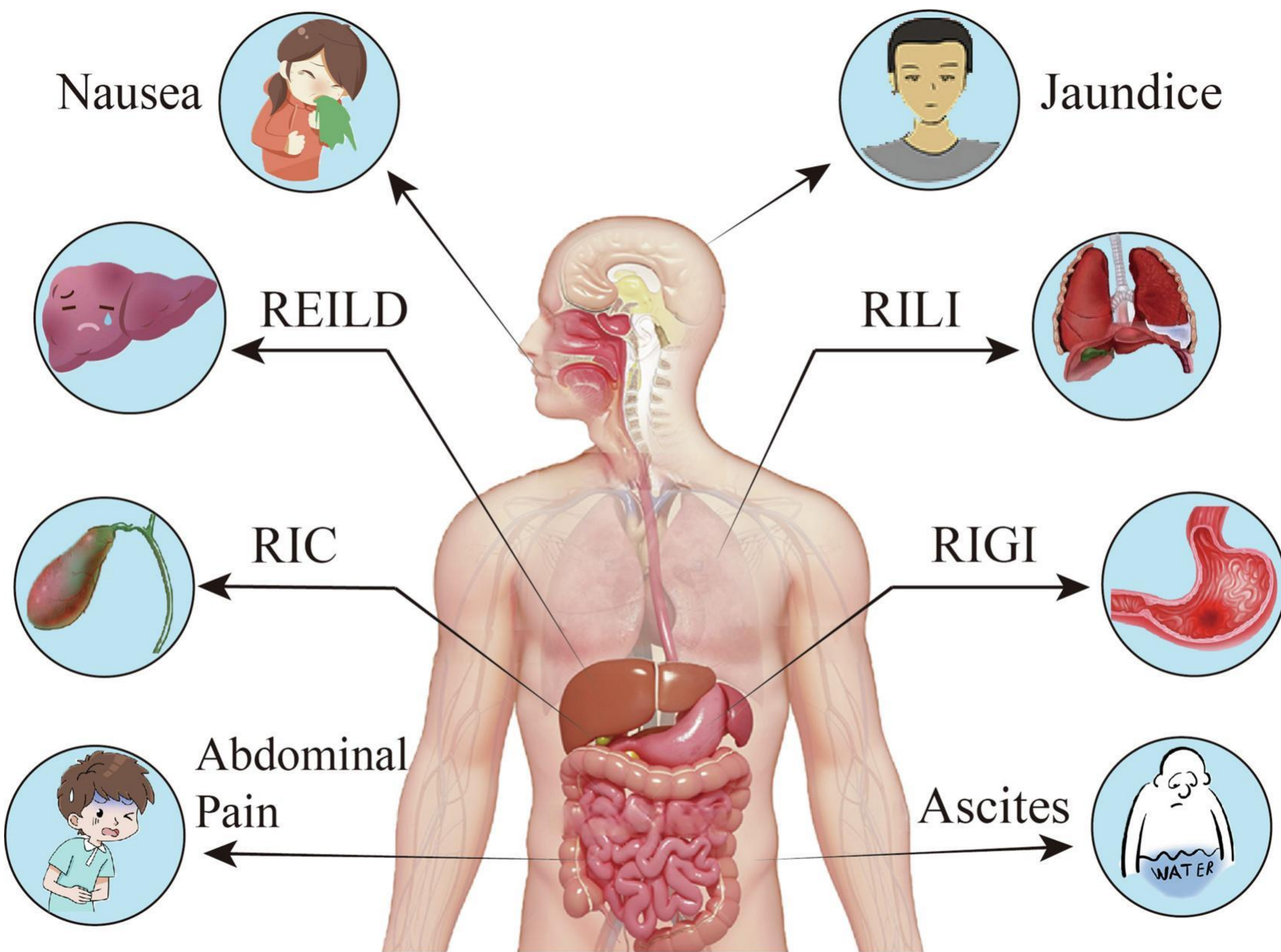


Figure 3: Major complications associated with TARE treatment⁴



Results

- Optimization of outcomes in TARE therapy requires meticulous pre-procedural angiography to embolize accessory arteries as well as visualize segmental and lobar portal vein involvement.
- Additionally, careful mapping with pre-therapeutic Tc-99m MAA is utilized for observation of shunting and non-target flow, while personalized dosimetry is necessary to reduce risks of liver toxicity.¹⁻²
- Contraindications to TARE include decompensated liver disease, main portal vein involvement, significant hepatopulmonary shunting, and uncorrectable gastrointestinal (GI) tract arterial flow.³⁻⁴
- TARE therapy carries significant risks of hepatic, pulmonary, and GI toxicity, which can be mitigated with careful patient selection and pre-procedure planning.⁴

Conclusions

- TARE is an innovative radiation therapy with high response rates in unresectable HCC and liver-dominant metastatic disease.
- By utilizing pre-procedural mapping, careful patient selection, and customized dosimetry, TARE offers high-dose, localized treatment with relative sparing of intact parenchyma.

Limitations

- Understanding of utilization of future TARE models is limited along with how to optimize dosimetry to enhance patient safety measures

Future Directions

- Continued prospective studies evaluating next-generation imaging models and refinement of dosimetric models are key areas that can continue to be studied to enhance the safety, efficacy, and patient population criteria of TARE therapy.

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