RE: Irreversible Electroporation of a Hepatocellular Carcinoma Lesion Adjacent to a Transjugular Intrahepatic Portosystemic Shunt Stent Graft

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Editor,

We read with interest the article by Niessen et al. (1) entitled "Irreversible Electroporation of a Hepatocellular Carcinoma Lesion Adjacent to a Transjugular Intrahepatic Portosystemic Shunt Stent Graft". In the article, the authors detailed the use of irreversible electroporation in the treatment of a hepatocellular carcinoma (HCC) adjacent to a transjugular intrahepatic portosystemic shunt (TIPS). While we agree with the authors that a HCC located adjacent to a TIPS poses a significant treatment challenge, we do not agree with the view that "radiofrequency ablation (RFA) in the vicinity of the TIPS stent-graft was ruled out because of

the risk of incomplete ablation due to the heat-sink effect as well as the risk of TIPS membrane destruction and thus potentially occluding the stent lumen." We would like to refer the authors and the readers to the article published by our group entitled "Transjugular Intrahepatic Portosystemic Shunt Occlusion via Modified Pringle Maneuver for Radiofrequency Ablation of Nearby Tumor" (2), in which in the exact same situation, temporary occlusion of the TIPS by inflating a non-compliant balloon was used to avert the development of a heat-sink during active ablation using RFA and the same access was used to measure shunt pressure and determine the integrity of the shunt after ablation. This technique has since been coined the "modified Pringle maneuver" and has been accepted within the ablation community. In our case, the TIPS remains patent and there has been no local tumor recurrence as of today (3 years since the procedure), demonstrating both the safety and feasibility of this technique.

Of note, while IRE is a novel ablation technique that is likely to present as a potential improvement to the current status of tumor ablation, its exact role in the treatment of HCC has yet to be validated, and the technology is currently not widely available. As such, readers should be aware that an HCC adjacent to a TIPS should not be considered a contraindication for curative ablation using conventional techniques such as RFA or microwave ablation. Additionally, the added advantage of accessing the TIPS for the modified Pringle maneuver, is that the shunt function could be assessed immediately after ablation and any potential dysfunction be remedied without delay (e.g., re-stenting), and this should be a consideration whenever potential shunt damage from any ablative therapy is anticipated.

REFERENCES

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Response

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Dear Dr. Pua,

Thank you for your annotations concerning our recent
article "Irreversible Electroporation of a Hepatocellular
Carcinoma Lesion Adjacent to a Transjugular Intrahepatic
Portosystemic Shunt Stent Graft".

The aim of our case report was not to depict tumor lesions
surrounding a transjugular intrahepatic portosystemic shunt

stent graft as a contraindication for thermal ablation. Of
course, we agree with Dr. Pua that the "modified Pringle
Maneuver" with temporary shunt occlusion via inflating a
non-compliant balloon represents an alternative method for
safe and effective tumor treatment in such areas when using
thermal ablation, but in our opinion, the percutaneous
placement of three 19-gauge electrodes for irreversible
electroporation alone without the need of an additional and
technically challenging angiographic intervention represents
an easier method of effective tumor treatment, although we
are, of course, aware that IRE is a novel technology with
limited availability.

As already mentioned in our case study, we also agree
that there is a strong need for prospective studies for
evaluation of the long-term efficacy of irreversible
electroporation.