

Abstract for ASCO 2018, section - Gastrointestinal (Noncolorectal) Cancer/Hepatobiliary Cancer

Title:

NBTXR3, hafnium oxide nanoparticles in the treatment of liver cancer: a phase I/II trial

Authors:

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Background

Hepatocellular carcinoma (HCC) is the most widespread primary liver cancer. Liver metastasis (mets) are even more common with a wide range of malignancies. Management of both liver affections is a challenging task regarding toxicity toward liver functions. In response, NBTXR3, innovative injectable hafnium oxide nanoparticles activated by radiotherapy, was developed to increase the local deposit of energy within the tumor cells without negatively affecting the liver. It is currently evaluated in a phase I/II clinical trial to introduce the use of NBTXR3 with stereotactic body radiation therapy (SBRT) in patients with HCC or liver mets [NCT02721056].

Methods

So far, eleven patients (pts) with HCC with/without with Portal Vein Tumor Thrombosis or liver mets were treated with a single intralesional or intraarterial injection of NBTXR3 followed by SBRT (45Gy / 3 fractions / 5 to 7 days). A 3+3 dose escalation design was implemented with five dose levels equivalent to 10%, 15%, 22%, 33% and 45% of the baseline tumor volume. Primary endpoints were the determination of the Recommended Dose and of Dose Limiting Toxicities (DLTs). Secondary endpoints included the local assessment on target lesions by mRECIST via MRI. Pts are followed until disease progression or study cut-off date.

Results

Enrollment is currently at the third dose level at 22% (1 pt) and completed for the first two levels at 10% (6 pts) and 15% (4 pts). The treatment resulted with no early DLTs, no adverse events (AE) related to NBTXR3 and no serious AE related to the injection or to SBRT. Dispersion and permanence assessments by CT scan confirmed NBTXR3 to stay within the tumor without negatively impacting liver functions nor the reliability of the image-guided radiation therapy.

Conclusion

Overall, current results observed a safe and well tolerated profile for NBTXR3 indicating an encouraging perspective in pts highly vulnerable to liver complications. This multidisciplinary study brought together the successful complex cooperation of several centers and of different medical disciplines to treat two types of liver affections with an innovative approach.