Transarterial Chemoembolization (TACE) in Multifocal Primary Liver Cancer

Supported by syngo DynaPBV Body

Patient history
A 65-year-old male with non-specific bilobar liver lesions was referred to our center due to diagnosis of suspected primary liver cancer for complementary examinations and to discuss therapy algorithm.

Diagnosis
First, a detailed laboratory examination showed a chronic hepatitis C virus (HCV) infection. A biopsy of one representative liver tumor was performed during contrast-enhanced ultrasound examination. To assess the extent of liver involvement, a dynamic MRI completed the diagnosis. MR imaging showed a multifocal hepatocellular carcinoma and advanced liver cirrhosis. Both contrast-enhanced ultrasound and MRI of the liver showed HCC-typical characteristics.

1 3D-reconstruction during arteriography for planning. Post-cTACE imaging of 2 HCCs in segment 5 and 6 (yellow arrows) and 3 hypervascular non-treated HCCs in liver segments 7 and 8 prior to chemoembolization (white arrows).
like wash-out phenomenon and “node-in-node” sign. Finally, the histopathology demonstrated a well differentiated HCC. No ascites or hilar lymph nodes and no extrahepatic disease were noted.

**Treatment**
In a multidisciplinary tumor board we decided to treat the multifocal HCC in this patient evaluated as Child-Turcotte-Pugh “A” by performing a conventional TACE (cTACE) with farnorubicin and lipiodol. The patient’s situation improved with a good partial response after the first cycle of cTACE of 2 hypervascular HCCs in segment 5 and 6 (yellow arrows on fig. 1). Unfortunately, liver function decreased at that time and further cTACE was not longer possible.
a 4-month interval, cTACE of three HCC in liver segments 7 and 8 was possible with reduced dose of chemotherapeutic agent up to 25% (white arrows on fig. 1). At follow-up, non-treated HCCs in segment 7 and 8 of the liver showed a local progression. After a further therapy interval, liver function allowed a new cycle of cTACE to treat progressive HCCs in segment 7 and 8 (fig. 2a and 2b). To minimize the adverse effects of further TACE with respect to liver function, we decided to use Parenchymal Blood Volume (PBV) imaging to define an end point for monitoring the course of chemoembolization.

Comments
At the beginning of each cTACE, a blood volume map of the liver was acquired using syngo DynaPBV Body functionality. The color-coded cross-sectional images show the hypervascularity of large HCCs (fig. 3a, 3b and 5a, 5b). At the anticipated end point of each chemoembolization, a second blood
A blood volume map was acquired to assess vascularization of tumors and tumor perfusion (fig. 4a, 4b and 6a, 6b). The lack of tumor perfusion during chemoembolization led us to stop the treatment, although the classical stasis of contrast medium was not reached. With respect to the reduced liver function in this specific patient, one major aim of the treatment was to limit the amount of cytotoxic drug by assessing the optimal end point of TACE, based on perfusion imaging obtained with syngo DynaPBV Body. We also used syngo DynaCT images to perform the embolization as selectively as possible.

Contact
simone.henrichs@siemens.com