

Segmental transcatheter approach to the early tumour

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Abstract Content

Early stage HCC can be curably treated or well controlled with local therapies like radiofrequency ablation (RFA) and transcatheter intra-arterial therapy. As the transcatheter intra-arterial therapy, both transcatheter arterial chemo-embolization (TACE) and hepatic arterial infusion chemotherapy (HAIC) are options can be selected. However, for the treatment of early stage HCC, the superselective TACE using a microcatheter system is the best way because of its stronger power to small lesions comparing with HAIC.

For good TACE, “The complete embolization of the entire tumor” must be needed. To achieve “The complete embolization of the entire tumor”, techniques and knowledge as follows are needed. The first is to confirm the main feeding artery of the tumor. For this, we should limit the potential feeding arteries from angiogram via proximal side with stepwise manner. Immediate insertion of micro-catheter system into a small artery without confirmation should be avoided. Also, angio-CT helps easing and smoothing the procedure. The second is to recognize that arterial blood to the tumor is never supplied via single artery. If the blood supply from the main feeding artery is stopped, the tumor must receive arterial blood via other small arteries. So, we should know the tumor is floating on the vascular network. This phenomenon occurs easily in hepatic segments border and bare area. Because of this, right sized embolic materials reaching intra-tumor vessels should be infused slowly to avoid making bigger cluster in proximal site before tumor vessels. Also, we should avoid the arterial occlusion or spasm caused by the inserted catheter. When the superselective catheterization is impossible, there is another way to perform the superselective embolization. If arterial branches except the target artery are embolized with temporary embolic materials, we can infuse the embolic materials only into the target artery. For this, the gelatin sponge block adjusted for the proximal size of vessel should be used to avoid the peripheral embolization of the non-tumorous part. A permanent embolic material-like steel coils should not be used, because there is some possibility of artery to start feeding blood to the tumor in the future.

Confirming “The complete embolization of the entire tumor” just after TACE is another important issue to get the good outcome. For this, volume image like CT is more useful than DSA image. On CT, we must check any defect of lipiodol accumulation or contrast media in the tumor. With defects, the TACE is incomplete, then, we must seek other feeding arteries. The accumulation of lipiodol in the portal vein branches around the tumor means lower recurrence rates than its absence. Also, we should know the importance of not only complete embolization via the arterial side but also the complete blockage of blood supply to the tumor, because the tumor sometimes survives with blood supply via the portal vein when arterial supply is stopped.

Reported CR ratio of definitely hypervascular HCC are around 30-60% by superselective TACE with lipiodol for hypervascular HCC less than 5 cm. According to a nationwide survey by the Liver Cancer Study Group of Japan (LCSGJ), overall 5-year survival rate was 26% in patients with HCCs not indicated for surgery or RFA. From these data, we should recognize that hypervascular early stage HCC is the good candidate for superselective TACE, but non-hypervascular HCC is not good candidate for this treatment option.

With respect to other surgical and ablative therapies, the important point is that RFA and superselective TACE easily can be repeated because of their limited invasiveness. Therefore, RFA and TACE are good candidates for patients with potential to occur multiple lesions after local

treatment. The selection of RFA and superselective TACE should be decided based on the tumor vascularity, location and size. When hypervascular HCC locates in difficult places for percutaneous RFA, TACE is the most suitable option.

In summary, the indication of superselective TACE should be decided by tumor vascularity and the difficulty of percutaneous RFA. The most important technical point to perform superselective TACE for early stage HCC is understanding of the feature of blood supply to the tumor and the arterial network of the liver, using adequate techniques and the confirmation of our procedure completion.

References

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Learning Objective

1. To present options of intra- arterial transcatheter therapy for early HCC
2. To discuss results of intra- arterial therapy in the early HCC
3. To understand the role of intra- arterial transcatheter therapy with respect to other surgical and ablative therapies