Authors:
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Presentation

A 65-year-old male, diagnosed ten years ago with cirrhosis of the liver due to alcohol use. During the disease process he had experienced an episode of decompensation with ascites three years ago and a clinical picture of upper gastrointestinal hemorrhaging secondary to esophageal varices; the bleeding was also stimulated by antiaggregant therapy. Along with liver disease, the patient suffered from primary antiphospholipid syndrome with protein C and antithrombin deficiency. He had suffered several episodes of thrombosis in the lower extremities, as well as portal and mesenteric venous thrombosis. For this reason he needed to follow guidelines for prophylaxis with Clopidogrel.

During a hospital admission due to a clinical picture of jaundice secondary to cholelithiasis, two hepatic nodules with increased uptake were detected by multislice CT in segment VII, measuring 12 and 14mm (Figure 1). The findings were corroborated by an MRI study and are compatible with two foci of hepatocellular carcinoma on a cirrhotic liver.

The patient was referred for evaluation for a liver transplant, but while waiting on this possible therapeutic option we decided to first perform microwave ablation on the two neoplastic lesions.

The patient underwent the percutaneous therapeutic procedure. Despite correct clinical control, during the CT-guided thermal ablation process the patient experienced a significant perihepatic bleed, and it was not possible to complete the treatment successfully.

Based on all the established problem areas, we decided to attempt transarterial chemoembolization of both hepatic lesions.

“Prior to the therapeutic procedure we prepared a combined embolic agent made of 15ml of Iomeron® and 150 mg of Adriamycin (Doxorubicin) adsorbed onto 100µm of TANDEM® Microspheres in a 3ml syringe.”

~ Dr. José Luis Miguélez Vidales

FIGURE 1 - Arterial phase multislice CT (left). Cirrhotic liver. Two nodules with increased uptake are identified in segment VII. CT slice in venous phase (right). The hypervascular lesions have become isodense with the adjacent hepatic parenchyma.
Embolization Procedure

Prior to the therapeutic procedure, a combined embolic agent was prepared from 15ml of Iomeron® and 150 mg of Adriamycin (Doxorubicin) adsorbed onto 100µm of TANDEM® Microspheres in a 3ml syringe.

With the patient sedated and the supporting anesthetist controlling constants, we catheterized the right common femoral artery and implanted a 5Fr hemostasis sheath. With a 0.035" Terumo® hydrophilic guidewire and a 5Fr Cobra catheter from AngioDynamics®, we catheterized the aorta, the celiac trunk and the common hepatic artery. We performed selective angiography of the hepatic artery and confirmed the presence of two hypervascular nodules in segment VII of the liver, which were irrigated by several branches of the right hepatic artery (Figure 2).

We introduced a Terumo® Progreat 2.7Fr catheter through the Cobra catheter. With this catheter we cannulated the various afferent blood vessels of the tumors and embolized them with the combination described above. The procedure was monitored with fluoroscopy such that the infusion of the embolic agent in the various arterial branches was ended when cessation of antegrade flow was confirmed (Figure 3).

**FIGURE 2** - Angiogram of the hepatic artery. This confirms the presence of two foci of hepatocellular carcinoma that are vascularized by several branches of the right hepatic artery.

**FIGURE 3** - Chemoembolization procedures on the neoplastic lesions and catheterization of the arterial branches with a microcatheter.
In the final follow-up angiogram we confirmed vascular exclusion of both tumor lesions (Figure 4). The entire procedure was completed with infusion of 10ml of the combined embolic agent.

One month after the transarterial chemoembolization procedure, we performed arterial and venous phase multislice CT to evaluate therapeutic response. In this exam we confirmed the total absence of enhancement of the neoplastic nodules in both the arterial and venous phases, as well as volume reduction of the nodules, indicating an excellent therapeutic effect (Figure 5).

**FIGURE 5 - Arterial phase multislice CT (left). The two nodules in segment VII appear hypodense. CT slice in venous phase (right). The lesions are again shown as hypodense. The findings suggest global chemoembolization and an excellent therapeutic effect.**

**FIGURE 4 - Follow-up angiogram after the chemoembolization procedure. Exclusion of neoplastic lesions.**

**Conclusion**

The administration of TANDEM® Microspheres through a 2.7 Fr Progreat® catheter allowed for complete selective embolization of the hypervascular lesions in a single procedure and also facilitated exposure of the neoplastic lesions to a high local dose of chemotherapy.

Furthermore, attainment of adequate control of the tumor foci ensures that a liver transplant will be performed because it protects the patient in the event of a possible delay in this therapeutic option.
**Dear Readers,**

Dr. José Luis Miguelez: Specialist in Radiology. He has been the head of the Vascular & Interventional Radiology Section of Hospital de Galdakao-Usánsolo since 1998.

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**TANDEM® MICROSPHERES REFERENCE NUMBERS:**

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