NLR increase relative to baseline at 1 week ($P = 0.02$) and 1 month ($P = 0.03$), but not 6 months ($P = 0.08$) postembolization. Compared to significant NLR increase relative to baseline at 1 week ($P = 0.01$) and 1 month ($P = 0.05$), but not 6 months ($P = 0.1$) postcryoablation for patients who received nivolumab prior to embolization or cryoablation, there was no significant change in NLR.

**Conclusions:** Transarterial embolization and cryoablation of RCC osseous metastases result in a transient increase in NLR, suggesting these procedures may transiently decrease potency of immune checkpoint inhibitor therapy particularly within a week of procedure. Further evaluation is needed to guide therapy timing.

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**Abstract No. 712**

**Sequential magnetic resonance imaging image-guided local immune checkpoint blockade immunotherapy using multifunctional carriers with cabazitaxel chemotherapy for the treatment of prostate cancer**

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**Purpose:** To evaluate the potential of sequential MR image-guided local immune checkpoint blockade immunotherapy using multifunctional carriers after a prechemotherapy in prostate cancer (PC).

**Materials:** Silica-based multifunctional carriers (ferumoxytol capped anti PD-L1 antibodies (aPD-L1) loaded ultra large pore mesoporous silica) were synthesized using an organic template method in an oil/water phase. aPD-L1 was loaded in the carriers by 24 h of co-incubation. Then, ferumoxytol was added for capping pores of carriers. ICB loading capacity and sustained release of aPD-L1 loaded carriers were measured by BCA assay. For animal study, 30 Tramp C1 bearing mice were divided by 5 groups of only PBS, only cabazitaxel (Cbz) treatment, only IT injected aPD-L1 loaded carriers, sequential IT injected aPD-L1 loaded carriers after Cbz and sequential systemic aPD-L1 treatment after Cbz. Therapeutic efficacy of each group was evaluated with immune cell characterization and tumor size tracking for 2 weeks.

**Results:** Cbz invert the TME by inducing immunogenic cell death (ICD) with PD-L1 overexpression of tumor. Followed aPD-L1 release from carriers blocked PD-L1 of tumors. In vivo study, chemotherapy and followed image-guided IT delivery of aPD-L1 loaded carriers synergistically attracted the activated CD8⁺ T cells to the tumor (29%, $P < 0.03$) than systemic aPD-L1 treatment (17%). Significant increase of CD8⁺ T cells/Treg ratio (11:1) and tumor regression (70%, $P < 0.01$) were observed in the sequential chemo-immunotherapy using aPD-L1 loaded carriers compared with systemic chemo-immunotherapy (27%).

**Conclusions:** Sequential MRI image-guided chemo-immunotherapy using aPD-L1 loaded multifunctional carriers demonstrated enhanced immune responses against PC. Our study will provide new potential of local immunotherapy using multifunctional carriers for the patients pretreated with chemotherapies.

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**Abstract No. 713**

**Benign biliary stricture after Y-90 radioembolization for hepatocellular carcinoma: incidence and causative factor**

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**Purpose:** To investigate the incidence and possible causative factor of benign biliary stricture after Y-90 radioembolization for hepatocellular carcinoma (HCC).

**Materials:** Between Jan 2016 and Dec 2018, 192 HCC patients underwent Y-90 radioembolization in author’s institute. Medical image and records were retrospectively reviewed with focus on benign biliary stricture and its management. Fisher’s exact test was used to determine the possible causative factor with SPSS 25.

**Results:** Among 192 HCC patients, 9 (4.7%) patients had biliary dilation on follow-up imaging studies which ranged from 3 months and 8 months. 5 patients underwent biliary stent insertion by endoscopy, and 1 patient received percutaneous transhepatic biliary drainage. 3 patients were not treated for benign biliary stricture. 7 of 9 patients with benign biliary stricture underwent injection of radioactive microspheres through the caudate artery. Tumor size and number, Child-Pugh class, vascular invasion, and administered activity were not related with the incidence of benign biliary stricture. Injection of radioactive microspheres through the caudate artery is the sole significant causative factor ($P < 0.05$).

**Conclusions:** Administration of radioactive microspheres through the caudate artery may increase the incidence of benign biliary stricture.

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**Abstract No. 714**

**Y90 radiation segmentectomy versus microwave ablation for hepatocellular carcinoma in locations suboptimal for percutaneous ablation**

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**Purpose:** Y90 radiation segmentectomy achieves response rates and survival outcomes comparable to curative-intent treatments such as ablation and resection for early stage for hepatocellular carcinoma (HCC) (1-3). The purpose of our study was to evaluate outcomes following percutaneous microwave ablation versus Y90 radiation segmentectomy for tumors in suboptimal locations for percutaneous ablation.

**Materials:** Retrospective review (January 2014–July 2019) was performed on patients who underwent either Y90 segmentectomy or microwave ablation (with or without prior TACE), with curative