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questionnaire replies (out of 73 PMT patients) were included in this study (41% return rate). 24/29 patients (83%) suffered from no or mild PTS symptoms, while the overall mean VEINES Sym/QoL scores were 75% and 76%, respectively. Direct correlation between the poorer PTS and VEINES Sym/QoL scores was observed. No statistically significant difference was seen between patients who were treated with/without stenting and compression stockings, neither their body mass index nor gender. **Conclusion:** There is a positive outcome in the symptoms of PTS and QoL among IF-DVT patients treated with PMT at long-term follow-up. Hence, PMT should be considered in this cohort. Improved patient selection factors targeting the most at-risk group should be further investigated.

OR3.1

Six-and-Twelve Score for Transarterial Chemoembolization: Is It Applicable for Hepatitis C Virus-Positive Patients with Hepatocellular Carcinoma?

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Objectives: A new scoring system named "six-and-twelve score" was presented by Wang *et al*. for the prediction of the overall survival in hepatocellular carcinoma (HCC) patients mostly due to hepatitis B virus (HBV) treated with transarterial chemoembolization (TACE). This scoring system is calculated by the sum of the tumor size and number. It divides the patients into three groups, G1 ≤6, G2 >6 but ≤12, and G3 >12 with a median overall survival of 49.1, 32.0, and 15.8 months, respectively. Our aim is to assess the prognostic value of this scoring system in HCC patients due to hepatitis C virus (HCV) treated with TACE in our center. **Methods:** A total of 79 HCV-positive patients with HCC treated with TACE were included in this study, with the same inclusion and exclusion criteria of the six-and-twelve score study. According to this scoring system, we divided our patients into three groups; G1 (24 patients), G2 (31 patients), and G3 (24 patients). We followed up our patients to assess the overall survival rate. **Results:** The mean overall survival rate at 3 years was 32 months for G1, 21 months for G2, and 10 months for G3. **Conclusion:** Our data suggest that six-and-twelve score could not be applicable for the prediction of overall survival in HCV patients with HCC treated with TACE. Further studies are recommended to validate this scoring system in the prediction of survival in HCC patients with HCV.

OR3.2

Safety and Efficacy of Microwave Ablation of Stage T1 Renal Cell Carcinoma

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Objectives: To evaluate the safety and efficacy of microwave ablation (MWA) of stage 1 renal cell carcinoma (RCC). **Methods:** We retrospectively reviewed the medical records of 29 patients with 31 tumors who underwent MWA for stage 1 RCC between 2008 and2018 in our institution. Patient demographics, tumor characteristics, technical success defined as the absence of residual tumor within 3 months of procedure, and complications were reported. The recurrence-free, cancer-specific, and overall survival rates were analyzed. A univariate analysis was performed to identify any potential predictors of complications, local recurrence, or survival. **Results:** Mean age of the patients was 64 ± 10.6 years, and 34.5% of the patients had chronic kidney disease stage 3 at baseline. The median Charlson comorbidity index was 5 (range: 5–12). The median tumor size was 2.7 cm (range: 1.0–6.1) with 18 (58.1%) posterior tumors. Stage T1a tumors were seen in 93.5% of patients. Median number of probes was 1 (range: 1–3), and biopsy was performed in 22 (72.4%) tumors. Technical success rate was 93.1%. Minor and major complications were seen in 5 (17.2%) and 1 (3.4%) patients, respectively. No local recurrence was reported. The overall survival was 100%, 84.6%, and 84.6% at 1, 3, and 5 years. Cancer-specific survival was 100% at 5 years. There were predictors for complications or survival outcomes. **Conclusion:** Percutaneous MWA is a safe and efficacious thermal ablation modality for the treatment of stage 1 RCC with acceptable outcomes.

OR3.3

Major Complications after Conventional Chemoembolization for Hepatocellular Carcinoma in the Era of C-Arm Computed Tomography

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Objectives: To evaluate the prevalence and contents of major complications after conventional trans arterial cehmoembolization (cTACE) for hepatocellular carcinoma (HCC) in the era of cone-beam computed tomography (CBCT) depending on tumor stages. **Methods:** We retrospectively reviewed electronic medical records of 822 patients who underwent cTACE for HCC between 2010 and 2011. Among them, 556 patients underwent cTACE under the guidance of CBCT. The prevalence and contents of major complications after initial cTACE were collected and the influence of tumor stage was investigated. **Results:** Major complications developed in 39 (4.7%) of 822 patients. Their prevalence in BCLC 0, A, B, and C stages was 0% (0/160), 2.9% (8/274), 1.2% (2/164), and 12.9% (29/224), respectively. In BCLC A stage, major complications developed in 8 patients (4 liver abscess, 1 septicemia with infarction, 1 gallbladder perforation, 1 variceal bleeding, and 1 spontaneous bacterial peritonitis). Four patients had predisposing factors of bilioenteric anastomosis (n = 2), previous history of variceal

bleeding (n = 1), and emergent TACE for ruptured HCC (n = 1). In BCLC B stage, major complications developed in two patients (1 liver abscess and 1 septicemia in a patient with biliary invasion). In BCLC C stage, major complications developed in 29 patients (deterioration of liver function, hepatic encephalopathy, liver abscess, septicemia, biliary injury, disabling pleural effusion, variceal bleeding, spontaneous bacterial peritonitis, and acute kidney injury as alone or in various combinations) with 1-month mortality in one patient. The prevalence of major complication in BCLC C stage was largely affected by the extent of portal vein thrombosis (segmental:sectional:lobar:bilateral or main = 0.0%:5.0%:11.8%:25.0%). **Conclusion:** cTACE for HCC can be safely performed in the early and intermediate stage or in advanced HCC with limited portal tumor thrombosis.

OR3.4

Percutaneous Transpapillary Placement of Biliary Metallic Stent in Patients with Malignant Extrahepatic Biliary Obstruction: Outcomes of Double-Bare Stent versus Polytetrafluoroethylene-Covered Stent

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Objectives: To investigate the outcomes of percutaneous transpapillary placement of biliary metallic stent in patients with malignant extrahepatic biliary obstruction and to compare the outcomes of the uncovered double-bare stent and polytetrafluoroethylene (PTFE)-covered stent. **Methods:** From April 2015 to December 2018, 83 patients (50 men, 33 women; mean age, 64.3 years; age range, 36–89 years) with malignant extrahepatic biliary obstruction were enrolled in this retrospectively study. All patients underwent percutaneous transpapillary stent placement: uncovered double-bare stent placement in 40 patients and PTFE-covered stent placement in 43 patients. **Results:** There were no significant differences in technical success (P > 0.999), successful internal drainage (P = 0.473), complications (P = 0.217), patient survival (P = 0.107), and stent patency (P = 0.103) and between the two groups. Overall patient survival times were 90 days (95% confidence interval [CI], 30–150 days) in double-bare stent group and 219 days (95% CI, 99–339 days) in covered stent group, respectively. Stent occlusion occurred in seven patients (20%) at a mean of 114 days in double-bare stent group (food reflux with sludge [n = 5] and tumor ingrowth [n = 2]) and in 16 patients (41%) at a mean of 170 days in covered stent group (food reflux with sludge [n = 8], tumor overgrowth [n = 5], stent migration [n = 1], blood clot [n = 1], and stent collapse due to subsequent duodenal stenting [n = 1]) (P = 0.153). Median stent patency times were 74 days (95% CI, 47–101 days) in double-bare stent group and 135 days (95% CI, 55–139 days) in covered stent group, respectively. **Conclusion:** Percutaneous transpapillary placement of the biliary metallic stent seems to be effective and safe in patients with malignant extrahepatic biliary obstruction. Stent type may not significantly affect technical and clinical outcomes.

OR3.5

Transarterial Therapy of Liver Tumors with Extrahepatic Blood Supply by Renal Artery and Its Branches

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Objectives: To evaluate the prevalence and survival of patients with hepatocellular carcinoma supplied by the renal artery and its branches who underwent transarterial therapy. **Methods:** This was a retrospective review in patients with liver tumors with extrahepatic supply from renal artery and its branches who underwent transarterial therapy in National Guard Hospital between 2009 and 2017. Number of lesions treated, tumor size, type of renal arterial branch, mode of treatment, and overall survival were all evaluated. **Results:** During this period, renal arterial supply to liver tumors was identified in 15 patients (9 males and 6 females). Their age ranged from 55 to 78 years. Of the 15 patients, 11 patients were treated with transarterial embolization (73.3%), 2 patients received transarterial chemoembolization (13.3%), and radioembolization through renal arterial supply was performed in 2 patients (13.3%). Thirty-three lesions were treated. The mean tumor size was 8.2 cm (range 2.5–17.5). All patients had cirrhosis. Fourteen patients had hepatocellular carcinoma (93.3%) while one patient had a neuroendocrine tumor (6.7%). A branch from the right renal artery was seen in 8 patients (53.3%); inferior phrenic arising from the renal artery was identified in 5 patients (33.3%); the capsular branch of right renal artery was the supplying branch in 2 patients (13.3%). The overall survival of these patients ranges between 1 and 79 months, with median survival of 23.7 months. **Conclusion:** Transarterial therapy of liver tumors with extrahepatic supply via renal artery and its branches is feasible and safe.

OR3.6

Portal Vein Embolization with Ethylene Vinyl Alcohol Copolymer for Contralateral Lobe Hypertrophy before Liver Resection: Safety, Feasibility, and Initial Experience

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Objectives: To report the preliminary experience with preoperative portal vein embolization (PVE) using ethylene vinyl alcohol (EVOH) copolymer liquid embolic agent. **Methods:** Patients with right-sided liver malignancies scheduled for extensive surgery and receiving induction of liver hypertrophy via right PVE with EVOH copolymer as the only embolic agent between 2014 and 2018 in two academic centers were retrospectively evaluated. Liver segments S2/3 were used to assess hypertrophy. Technical success rate, percentage of future liver remnant (FLR) increase, degree of hypertrophy of FLR, kinetic growth rate (KGR),