Coffee is one of the most popular beverages worldwide. Several previous studies suggest coffee consumption is inversely related to the risk of liver cirrhosis or hepatocellular carcinoma (HCC). However, the effect of coffee drinking on the risk of HCC in Korean patients with chronic liver diseases has never been elucidated.

**Methods:** A total of 872 patients (613 chronic liver disease and 259 HCC patients) who visited Seoul National University Bundang Hospital from July 2007 to February 2008 were enrolled in this study, who agreed to participate to a comprehensive questionnaire survey about smoking, alcohol and coffee drinking.

**Results:** In this cross-sectional study, HCC patients were older (61.0 vs. 51.0 years old, p<0.001) and included more males (77.2% vs. 61.0%, p<0.001) than chronic liver disease (CLD) patients. The mean body mass index (BMI) was lower (23.5 vs. 24.2, p=0.015), and the presences of hepatitis virus were more frequent in HCC group (83.8% vs. 71.5%, p<0.001) compared to CLD group. Daily amount of alcohol drinking and smoking were both higher in HCC group (median alcohol, 1.6 vs. 0 g/day, p<0.001; median smoking, 0.6 vs. 0.3 pack/day, p<0.001). The HCC group showed significantly lower proportion of high coffee consumers who drank 3 or more cups of coffee daily compared to CLD group (13.1% vs. 22.2%, p<0.002). In multivariable analysis, the high coffee consumption was independent predictor of HCC (OR 0.55, 95% CI. 0.34-0.91, p=0.019) after adjustment of age, gender, BMI, the presence of hepatitis virus, moderate to high alcohol drinking (male, ≥70 g/day; female, ≥55 g/day) and smoking (≥0.5 pack/day).

**Conclusions:** High coffee consumption in chronic liver disease patients was significantly associated with the reduced risk of HCC. Further studies are warranted to establish the mechanism of the protective role of coffee drinking against development of HCC.

**Keywords:** Hepatocellular carcinoma, Coffee, Alcohol, Smoking, Korea

---

**Efficacy of chest computed tomography and bone scan on initial staging work-up for patients with hepatocellular carcinoma: prospective analysis in a single center**

Young-Joo Jin, Han Chu Lee, Danbi Lee, Ju Hyun Shim, Kang Mo Kim, Young-Suk Lim, Young-Hwa Chung, YungSang Lee

**Department of Internal Medicine, Asan Medical Center, University of Ulsan College of Medicine, Seoul, Korea**

**Background:** We intended to analyze the efficacy of chest computed tomography (CT) and bone scan on initial staging work-up for patients with hepatocellular carcinoma (HCC).

**Methods:** A total of 381 patients who were initially diagnosed as having HCC between April 2008 and December 2010 in our institution were consecutively enrolled. Chest CT and bone scan were performed for HCC staging work-up. We prospectively analyzed whether chest CT and bone scan could change the BCLC and UICC (7th) TNM stages compared to dynamic liver CT and chest X-ray.

**Results:** Median age of 381 patients was 56 (range, 32-88). Male was 81.6% and 77.2% for BCLC stages 0, A, B, C, and D, and 46, 22, 9, 9, 0, 2, and 12% for UICC stages I, II, IIIA, IIIB, IIIC, IVa, and IVb, respectively. Among 381 patients, abnormal findings on chest CT and bone scan were observed in 227 (59.6%) and 201 (52.8%) patients, respectively. However, only 29 (7.6%) and 8 (2.1%) among 381 patients showed truly metastatic intrathoracic and bone lesions during follow up. Among these 37 patients, 8 (8/29, 28%) and 7 (7/8, 88%) patients showed same metastatic intrathoracic and bone lesions, respectively on liver dynamic CT or chest x-ray. Only 4 and 2 out of 381 patients showed changes in BCLC stage [A→C (1/135, 0.7%) and B→C (3/61, 4.9%)] and treatment modalities, respectively. Additional detection of metastasis by chest CT and bone scan according to T stage was only 1.1% in T2 (n=88), 18.2% in T3a (n=55), and 17.5% in T3b (n=57).

**Conclusions:** Staging by chest CT and bone scan may not be cost-effective for obtaining additional information of BCLC and UICC TNM stages in HCC patients with early or advanced stages on liver dynamic CT.

**Keywords:** Hepatocellular carcinoma, Chest computed tomography, Bone scan, Barcelona Clinic Liver Cancer stage, UICC TNM stage

---

**Anti-hepatitis B core positivity as a risk factor for hepatocellular carcinoma in alcoholic cirrhosis: a case-control study**

Oh Sang Kwon, Young Kul Jung, Yun Soo Kim, Sang Gyune Kim, Young Seok Kim, Jung Il Lee, Jin Wook Lee, Young Soo Kim, Byung Chul Chun, Ju Hyun Kim

**Department of Internal Medicine, Gachon University Gil Medical Center, 1Department of Internal Medicine, SoonChunHyang University Hospital, 2Department of Internal Medicine, Inha University Hospital, 3Department of Preventive Medicine, Korea University, Korea**

**Background:** Hepatocellular carcinoma (HCC) is occasionally developed in patients with alcoholic cirrhosis. Old age, male gender, life time quantity of alcohol, and presence of hepatitis C virus (HCV) infection are risk factors for HCC in alcoholic cirrhosis. In this study, we investigated whether anti-hepatitis B core (HBc) positivity or occult hepatitis B virus (HBV) infection is a risk factor for HCC in patients with alcoholic cirrhosis.

**Methods:** Between January 2006 and August 2008, a total of 72 cirrhotic male patients with an initial diagnosis of HCC, hospitalized in three major hospitals in the Incheon area, were
enrolled as cases. Another 72 cirrhotic male patients without HCC, who matched the cases by age (±3 years), were enrolled as controls. All cases and controls had not hepatitis B surface antigen and anti-HCV, but had history of chronic alcohol intake over 80g/day. The clinical characteristics including presence of anti-HBc or serum HBV DNA [identified by nested polymerase chain reaction (PCR)] were investigated.

**Results:** The mean age of both the cases and controls was 62±10 years. The basal laboratory data, Child-Pugh scores, total lifetime alcohol intake (1,459±1,364 versus 1,641±1,045 kg), and detection rates of serum HBV DNA (31.7% [20/63] versus 29.9% [20/67]) of the cases and controls were not significantly different. However, the anti-HBc positivity rate was higher among the cases [86.1% (62/72)] than in the controls [66.7% (48/72); \( P=0.005 \)] and was the only significant risk factor for HCC (odds ratio; 3.1, 95% confidence interval; 1.354-7.098, \( P=0.007 \)).

**Conclusions:** Anti-HBc positivity is a risk factor for the development of HCC in patients with alcoholic cirrhosis. Further study is needed whether occult HBV infection defined by other methods is associated with HCC development.

**Keywords:** Anti–HBc, Hepatocellular carcinoma, Alcohol

0-053

**The value of \(^{18}\)F-FDG PET scan in diagnosis of hepatocellular carcinoma**

Ji Eun Lee,
Jae Young Jang, Soong Won Jeong, Sae Hwan Lee, Sang Gun Kim, Young Seok Kim, Young Deok Cho, Hong Soo Kim, Boo Sung Kim, Dongho Choi, So Young Jin, Yong Jae Kim, Deuk Lin Choi

**Institution for Digestive Research, Digestive Disease Center, 1Department of Internal Medicine, 2Department of Surgery, Soonchunhyang University Hospital, Seoul, Republic of Korea**

**Background:** The value of \(^{18}\)F-FDG PET scan in detection of primary hepatocellular carcinoma (HCC) and extrahepatic metastases has been evaluated, but detailed reports are still limited. We analyzed the sensitivity, specificity, and accuracy between conventional imaging modalities and \(^{18}\)F-FDG PET scan.

**Methods:** A total of 138 patients with HCC who had both conventional imaging modalities (abdomen computed tomography (CT)/magnetic resonance imaging (MRI), chest CT, bone scan) and \(^{18}\)F-FDG PET scan done between November 2006 and March 2011 were enrolled. Diagnostic value for detection of extrahepatic metastases between conventional imaging modalities and \(^{18}\)F-FDG PET scan were evaluated and tumor characteristics including \(^{18}\)F-FDG PET scan findings were analyzed as risk factors for metastases by univariate and multivariate methods.

**Result:** 1) The sensitivity, specificity and accuracy for detection of lung metastases in \(^{18}\)F-FDG PET scan were 60.9%, 99.1%, and 92.6%, respectively and 100%, 98.2%, and 98.5%, respectively in chest CT. 2) The detection rate of metastatic pulmonary nodule ≥ 1 cm was 12/13 (92.3%), when <1 cm was 2/10 (20%) in \(^{18}\)F-FDG PET scan. 3) The sensitivity, specificity and accuracy for detection of bone metastases were 100%, 100%, and 100%, respectively in \(^{18}\)F-FDG PET scan and 63.6%, 96.8% and 94.1%, respectively in bone scan. 4) In multivariate analysis, increased tumor size (≥ 5 cm) (\( p=0.042 \)) and increased average standardized uptake value (SUV) uptake (≥ 3.4) (\( p=0.028 \)) were predictive factors for extrahepatic metastases. Isometabolic HCC in \(^{18}\)F-FDG PET scan was inversely correlated in multivariate analysis (\( p=0.035 \)).

**Conclusion:** \(^{18}\)F-FDG PET scan is invaluable for detection of lung metastases larger than 1 cm and bone metastases. Primary HCC having larger than 5 cm and increased average SUV uptake more than 3.4 should be considered for extrahepatic metastases.

**Keywords:** \(^{18}\)F-FDG PET scan, Diagnosis, Extrahepatic metastases

0-054

**Do we change the decision making for treatment in non-advanced HCC after adding Gd-EOB enhanced MRI?: comparison with imaging and liver pathology**

Sun-hong Yoo, Jong Young Choi, Pilsoo Sung, Hee Yeon Kim, Do Seon Song, Chung-Hwa Park, Myeong Jun Song, Young Sok Lee, Nam Ik Han, Si Hyun Bae, Seung Kew Yoon

**Department of Medicine, The Catholic University of Korea, Seoul, Korea**

**Background:** In the pretreatment evaluation of HCC, it is important to diagnose the number and location of HCCs accurately to choose the most appropriate curative treatment. This study aimed to compare between diagnostic performance of triple phase MDCT and Gd-EOB enhanced MRI, and to assess the effects of these diagnostic tools on making the treatment decision.

**Methods:** This is a retrospective analysis of 33 patients performed triple phase MDCT, Gd-EOB enhanced MRI and underwent liver transplantation. Number and location of nodules were evaluated, and HCCs were confirmed by pathologic examination after liver transplantation. We analyzed the change of the treatment decision before and after performing Gd-EOB enhanced MRI. Treatment options included radiofrequency ablation, surgical resection and liver transplantation.

**Results:** Between April 2008 and July 2010, 33 patients performed triple phase MDCT, Gd-EOB enhanced MRI and underwent liver transplantation. 34 nodules were detected in triple phase MDCT, and 58 nodules were detected in Gd-EOB enhanced MRI. All nodules, except one nodule, detected in Gd-EOB enhanced MRI, were confirmed by pathologic examination as HCCs. When we compared between the diagnostic performance of triple phase MDCT and Gd-EOB enhanced MRI, the rate of changing treatment decision was 39.39%. Among the 26 patients available for RFA after performing Gd-EOB enhanced MRI, 6 (23.07%) patients were changed treatment decision because RFA was unavailable after performing MRI. Among the 26 patients available for surgical resection of HCCs before performing MRI, 7 (26.92%) patients were unavailable for surgical resection after performing MRI. 4 (14.81%) patients,