

# Challenges to Hepatocellular Carcinoma in Korea

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Hepatocellular carcinoma (HCC) is a highly malignant cancer and the fifth common cancer in the World. It is the third major cause of death and more prevalent among men in the sixth to seventh decades in Korea. HCC is particularly prevalent in Korea where the age-standardized incidence rate in 45.0/100,000 population in males and 12.0/100,000 population in females. (1) Approximately 65-75% of HCC patients were positive for hepatitis B surface antigen (HBsAg), where 10-20% of patients were anti-hepatitis C virus (HCV) positive. (2) The high incidence rate of HCC in Korea is thought to be related to the high carrier rate of hepatitis B virus (HBV) in the general population. For primary prevention, a nationwide HBV vaccination program has been conducted since the late 1980s, and it has reduced the risk of primary liver cancer in Korea. (3) Decades ago, apparent symptoms such as abdominal pain, weight loss, ascites and jaundice were the first clue for diagnosis of HCC and these brought the patients hospital. Far-advanced stage was common presentation and successful treatment was extremely difficult. The median survival duration was only 4 months and chemotherapy couldn't improve survivals. Therefore, the early detection of HCC became the key issue (4, 5) and a nationwide screening and surveillance program started. When we analyzed the independent risk factors, liver cirrhosis, chronic hepatitis B or C infection, age (> 40 years), history of heavy alcohol use, liver parenchymal echo pattern in ultrasonography (severe echo pattern), initial levels of serum alpha-fetoprotein (> 20 ng/mL) or alanine aminotransferase (> 40 IU/L) at enrolment were all important in affecting the development of HCC. Multivariate analyses demonstrated that liver cirrhosis, chronic hepatitis, HCV infection, HBV infection, and age exceeding 40 years were all independently associated with the risk of HCC development. (6, 7, 8) Recently, advancement in diagnostic radiology and nuclear medicine contributed accurate and early diagnosis of HCC. Furthermore, experiences in interventional radiology, radiation oncology and surgery field have grown, and new therapeutic choices have been developed including percutaneous ablation therapy, transarterial chemoembolization (TACE), radiation therapy and molecular target therapy. Percutaneous radioactive holmium injection (9) and concurrent intraarterial chemo-radiation therapy (10) was newly developed and has been applied in Korea. Patients, treated with percutaneous Holmium-166 injection for hepatocellular carcinoma smaller than 3 cm, showed 87%, 71%, and 65% of 1 year, 2 year and 3 year- cumulative survival rate, respectively. Subsegmental TACE is another frequently selected

procedure. TACE Among the 470 cases that TACE was performed as first treatment procedure in a single institute, 1, 2, 3, 4, and 5 year overall survival rates were 66.1%, 45.0%, 34.1%, 28.2%, and 22.0%, respectively. For advanced HCC, repetitive hepatic arterial infusion chemotherapy was used. (11) With portal vein invasion, radiotherapy with concurrent intraarterial chemotherapy has been tried. The median survival reached 13 months even though advanced stage. In conclusion, hepatologists in Korea are still making challenges to HCC to overcome it.

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