pISSN 2287-2728
eISSN 2287-285X

CMH

https://doi.org/10.3350/cmh.2017.0046
Clinical and Molecular Hepatology 2017;23:222-223

Editorial

Surveillance of hepatocellular carcinoma: is only ultrasound enough?

Woo Kyoung Jeong

Department of Radiology and Center for Imaging Sciences, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Korea

Keywords: Hepatocellular carcinoma; Surveillance; Ultrasonography; Magnetic resonance imaging (MRI)

See Article on Page 239

Early detection of hepatocellular carcinoma (HCC) is very important because the 5-year survival rate of early stage HCC (about 40% to 70%) is better than that of advanced stage HCC (less than 5%).[1] In some countries, high-risk patients undergo a hepatocarcinoma surveillance program using ultrasound and serum alpha-fetoprotein (AFP) levels.

However, there are several drawbacks of surveillance program using ultrasonography. For high chance of receiving curative treatment, the stage of HCC should be low, such as very early (BCLC 0) or early (BCLC A) stage. However, detection of small lesions by ultrasound is not easy. According to a meta-analysis,[2] the sensitivity of ultrasonography was 65% to 80%. Although accompanying with measurement of serum AFP, the sensitivity to detect early HCC was not increased.[3] Therefore, it seems not to be enough to perform ultrasonography as the only imaging method for surveillance of HCC. According to a retrospective study by Wong, et al.[4] mean size of detected HCC lesion was 3.2 cm and 61% of patients (158/257) had a tumor less than 3 cm of the largest dimension. Another study performed by Kim, et al.[5] shows that only one tumor was detected by ultrasonography only among 1,100 screenings for 407 patients, but 26 cases were detected by the surveillance by magnetic resonance imaging (MRI). They said that MRI with hepatospecific agent such as gadoxetic acid (Gd-EOB-DTPA) is more sensitive than ultrasonography only to detect early stage HCC in high-risk patients. Additionally, MRI also showed a significantly lower false-positive rate and higher positive predictive value than ultrasonography. Moreover, their result of ultrasonographic surveillance (28%) was very poorer than that of meta-analysis (63%),[3] and they explained that a kind of lead-time bias and inherent distortions of the liver parenchyma by advanced cirrhosis affected the result. Although it was not appeared in these papers, variable level of ultrasonographic quality is one of the most important issues of ultrasonographic surveillance for HCC. In Korea, a nationwide screening program for HCC has been performed from 2003 as a part of the National Cancer Screening Program (NCSP), and its quality assessment was also performed. According to the report about the quality control of screening liver ultrasonogra-

Abbreviations:

AFP, alpha-fetoprotein; Gd-EOB-DTPA, gadoxetic acid; HCC, hepatocellular carcinoma; MRI, magnetic resonance imaging; NCSP, National Cancer Screening Program

Corresponding author : Woo Kyoung Jeong
Department of Radiology and Center for Imaging Science, Samsung Medical Center, Sungkyunkwan University School of Medicine, 81 Irwon-ro, Gangnam-gu, Seoul 06351, Korea
Tel. +82-2-3410-2548, Fax. +82-2-3410-0049
E-mail: jeongwk@gmail.com
http://orcid.org/0000-0002-0676-2116

Received : Aug. 23, 2017 / **Accepted :** Aug. 28, 2017

phy,[6] 21% of hospitals (143/685) and 32% (645/1,985) of private clinics did not passed the quality assessment. In addition, there are some patients' factors to interfere an ultrasonographic exam, such as obesity, coarse echotexture, thickened adipose tissue of abdominal wall, increased waist circumference, uncooperative patient, a lot of bowel gas, and difficulty of position change due to limited patients' movement.[4] Apart from these limitations, ultrasonography still has an unconquerable limitation: ultrasonography is operator-dependent. The quality of exam by experienced operator is different from that by novice, and the result can be also different.

To solve the problems of conventional imaging surveillance of HCC, we should consider introducing other objective imaging modalities such as CT or MRI. As mentioned above, the sensitivity of MRI to detect the curable HCC lesion which is able to be treated by locoregional treatments, such as resection, radiofrequency ablation, microwave ablation, and cryotherapy, was very significantly higher than that of ultrasonography. However, a major consideration is the cost-effectiveness of the surveillance program using MRI. Therefore, it would be desirable that MRI surveillance should be limited to those who will be able to be cured; for example, early stage HCC, compensated cirrhosis, and good performance status. Because the development risk of HCC is not same in the risk population, a tailored strategy using these imaging and serologic examinations should be considered. In addition, an effective quality assessment system for surveillance test including ultrasonography should be introduced and the surveillance program should be controlled to achieve the purpose of HCC surveillance.

Conflicts of Interest

The author has no conflicts to disclose.

REFERENCES

1. El-Serag HB, Davila JA. Surveillance for hepatocellular carcinoma: in whom and how? Ther Adv Gastroenterol 2011;4:5-10.
2. Kim DY, Kim HJ, Jeong SE, Kim SG, Kim HJ, Sinn DH, et al. The Korean guideline for hepatocellular carcinoma surveillance. J Korean Med Assoc 2015;58:385-397.
3. Singal A, Volk ML, Waljee A, Salgia R, Higgins P, Rogers MA, et al. Meta-analysis: surveillance with ultrasound for early-stage hepatocellular carcinoma in patients with cirrhosis. Aliment Pharmacol Ther 2009;30:37-47.
4. Wong LL, Reyes RJ, Kwee SA, Hernandez BY, Kalathil SC, Tsai NC. Pitfalls in surveillance for hepatocellular carcinoma: How successful is it in the real world? Clin Mol Hepatol 2017;23:239-248.
5. Kim SY, An J, Lim YS, Han S, Lee JY, Byun JH, et al. MRI with liver-specific contrast for surveillance of patients with cirrhosis at high risk of hepatocellular carcinoma. JAMA Oncol 2017;3:456-463.
6. Choi MH, Jung SE, Choi JI, Jeong WK, Kim HC, Kim Y, et al. Quality management of ultrasound surveillance for hepatocellular carcinoma under the Korean National Cancer Screening Program. J Ultrasound Med Jul 24 2017. [Epub ahead of print]