### Introduction

Multiple primary malignancies are defined as two or more different malignancies detected synchronously or metachronously in different organs of an individual patient. However, studies for the clinicopathologic features regarding multiple primary malignancies patients with hepatocellular carcinoma (HCC) are insufficient. In this study, we performed a retrospective study to investigate the clinicopathologic features for the HCC patients with multiple primary malignancies.

### Methods

Between May 1997 and July 2016, 1,043 HCC patients had been received radical surgical treatment including hepatectomy and liver transplantation in our institute. Among them 58 (5.6%) cases were diagnosed with extra-hepatic primary malignancies. The comparison between single primary HCC and multiple primary malignancies were performed. The clinicopathologic features including Age, Sex, HBs Ag (positive), HCV Antibody (positive), AFP (more than 400 ng/ml), tumor size (more than 5 cm), multiple tumor number, microvascular invasion, Edmondson grade (grade 3 and 4), cirrhosis (fibrosis stage 4), AJCC staging for HCC (stage 1).

### Results

The median follow up time is 13 months in the present study. Of the 58 (5.6%) multiple malignancies patients, 8 were diagnoses synchronously and 50 metachronously; 14 patients' extra-hepatic primary malignancies occurred prior to their HCC diagnoses, and 36 after their HCC diagnoses. The five first rank extra-hepatic primary malignancies location were stomach (15 cases, 25.9%), lung (10 cases, 17.2%), colorectal (9 cases, 15.5%), Kidney (6 cases, 10.3%), bladder (4 cases, 6.9%). The patients with multiple primary tumor have a significantly longer over survival (OS) compare to single primary tumor patients. The 5 years OS rate for multiple and single primary tumor were 77.8% and 66.9%, respectively (P=0.036). The multiple primary tumor patients have the following clinicopathologic features: older mean age, more patients with non-viral background liver, fewer patients with liver cirrhosis and more patients with AJCC stage I for HCC.

### Conclusion

The patients with multiple primary tumors have a relatively good prognosis mostly due to non-viral background liver and less invasive tumor characteristic. Also we could consider that there is a chance to detect malignancy earlier due to a screening study and the clear etiopathogenesis is difficult to find, we could consider a genetic influence about tumor suppression. In this respect, we need a further study in the future.