

中文題目：保疾伏合併質子治療於晚期肝癌之效益

英文題目：Survival benefit of combination with nivolumab and proton beam therapy in advance stage hepatocellular carcinoma

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## Background

The fourth frequent cause of cancer-related deaths worldwide in 2018, hepatocellular carcinoma, also reported the second frequent cause of cancer-related death in Taiwan. Immune checkpoint inhibitors, nivolumab has been shown to be effective in advanced hepatocellular carcinoma.

## Materials and methods

The study cohort consisted with 92 patients with advanced hepatocellular carcinoma who received nivolumab from 1<sup>st</sup> of January 2016 to 31<sup>st</sup> of December 2018 in International Medical Center, Chang Gung Memorial Hospital. Univariate analyses were conducted to identify the prognostic factors for survival after received nivolumab treatment.

## Result

Of the 92 enrolled patients, 48 patients who death within 30days after received nivolumab or no adequate post-treatment image evaluation were excluded. 44 patients were diagnosed with hepatocellular carcinoma according to images or tissue biopsy. The median age of the patients was 61years, and 36 of them (82%) were male. The Eastern Cooperative Oncology Group performance status was 0-1 in 40 patients (91%) and 2 in 4 patients (9%). 40 patients (91%) were classified as Child-Pugh class A and 4 (9%) as Child-Pugh class B. 11 (25%) patients received the combination therapy with target therapy and 6 (14%) with chemotherapy. Combining nivolumab with radiotherapy, 26 patients (59%), 11 of them accepted proton therapy. Overall survival (OS) and progression free survival (PFS) of study patients revealed a trend was seen in favor of combination with proton beam therapy. Conventional radiation therapy, by contrast, had no significantly survival benefit. Albumin-bilirubin (ALBI) grade score >1, hepatitis B and C coinfection, absolute lymphocyte count < 1000 per  $\mu$ L, and alpha-fetoprotein of >200 ng/mL when diagnosed, these factors may be correlated with poor prognosis. Additionally, overweight, body mass index >25 demonstrated unfavorable outcome in study patients which different from previous research of obesity in cancer patients treated with immunotherapy. The retrospective nature and

the small sample size are the main limitations of this study.

#### Conclusion

Nivolumab combined with proton beam therapy potentially increases the median OS and PFS rather than nivolumab alone of patients in advance stage hepatocellular carcinoma.