Clinicopathologic significance of heat shock protein 60 as a survival predictor in colorectal cancer

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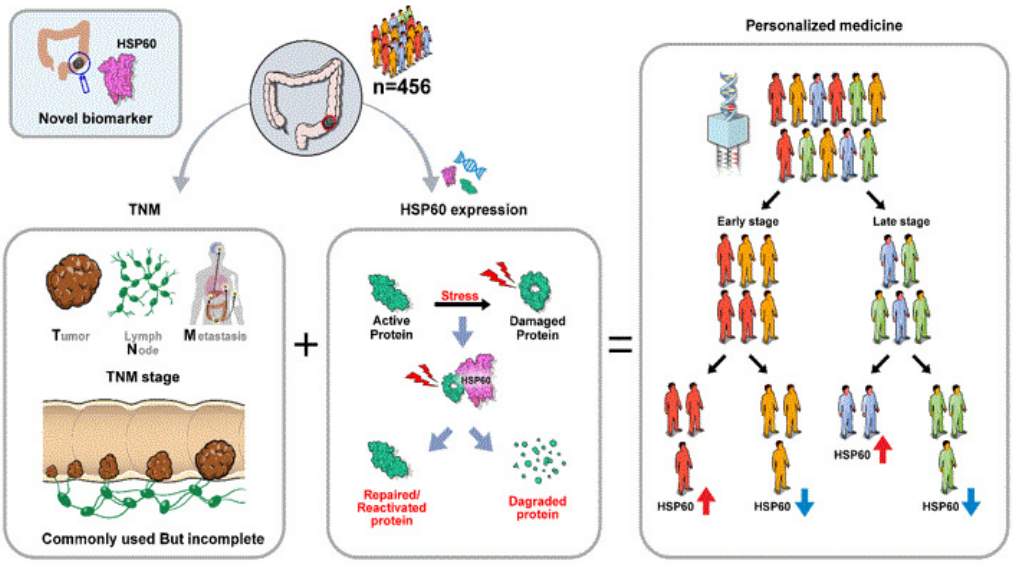
Background/Aims: Heat shock protein 60 (HSP60, also called Cpn60), a stress protein that acts as a defense mechanism in cells, is a promising candidate for the prevention and treatment of CRC. Although there have been some reports on the potential of HSP60 as a biomarker, very few studies have demonstrated its clinical efficacy, particularly in CRC. In the present study, we conducted a study to clarify the clinical significance of HSP60 in CRC.

Methods: This study included patients who underwent CRC surgery at Gachon University Gil Medical Center between April 2010 and January 2013. A tissue microarray was prepared from the tissues of 456 primary CRC patients who underwent surgery and analyzed by immunohistochemistry. Univariate and multivariate analyses were performed on the correlation between HSP60 and clinicopathological characteristics to evaluate potential factors influencing prognosis.

Results: Patients with differentiated and p53-mutated CRC express high levels of HSP60. Compared with patients with high HSP60 expression, those with low expression had event-free and disease-specific survival hazard ratios of 1.42 and 1.69, respectively. TNM class and HSP60 expression affected survival, especially in late/advanced stages. Expression of the gene HSPD1, which encodes HSP60, exhibited the same pattern as the protein. The hazard ratios for overall and relapse-free survival were 1.87 and 1.87, respectively, for patients with reduced HSPD1 expression. Low HSPD1 expression and advanced malignancy worsen CRC prognosis.

Conclusions: HSPD1/HSP60 can be a useful biomarker for a sophisticated survival prediction in late- and advanced-stage CRC, allowing the design of individualized treatment strategies.



The pathological stage of most malignancies, including CRC, predicts the patient's prognosis. However, because clinical outcomes can differ even among patients at the same stage, we investigated HSP60 expression in CRC patients using TNM classification to find new biomarkers that can reliably predict cancer patients' prognoses. Low HSP60 expression was associated with poor prognosis. In late/advanced stages, TNM class and HSP60 expression impacted survival. HSP60 may predict late-stage CRC survival, allowing personalized medication.