中文題目：癌症患者接受腫瘤次世代分析後的治療追蹤、腫瘤反應與預後

英文題目：Outcomes of Precision Oncology Using Next-generation Sequencing in Multiple Cancer Patients in Taiwan - Timing of Next-Generation Sequencing and Gene Alteration Categories Correlated to Survival

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***Background:*** Next-generation sequencing (NGS) has been widely implemented for cancer treatment, but several uncertainties still exist in its clinical use. Our study aimed to identify the prognostic factors of patient survival after NGS testing to improve the utility of NGS and aid clinicians in cancer care.

***Materials and Methods:*** We investigated the patients with cancer receiving NGS testing and systemic therapies between 2016 and 2020 in a tertiary medical center. The patient characteristics, timing of NGS testing, and survival outcomes were analyzed after comprehensive genomic profiling.

***Results:*** We analyzed the data with subsequent therapies and outcomes from 126 patients according to the predesigned criteria. We found that 27.2% of the patients exhibited druggable gene alterations, and 24.5% had undergone treatment corresponding to their NGS results. Patients with category 1–2 alterations had a better median progression-free survival (mPFS) ($P$<0.0001) and median overall survival (mOS) ($P$=0.0001) based on the NGS results. Patients receiving treatments corresponding to NGS results had better mPFS ($P$=0.0037) and mOS both from NGS ($P$=0.0009) and cancer diagnosis ($P$=0.0069). Multivariate *Cox* regression analysis revealed that the cancer type ($P$=0.007), timing of gene testing ($P$=0.004), and category 1–2 alterations ($P$=0.001) were independent prognostic factors for mPFS, while the timing of gene testing ($P$=0.002) and category 1–2 mutations ($P$=0.002) were independent prognostic factors for mOS.

***Conclusions:*** Categories 1–2 alterations and the timing of NGS testing can significantly impact the patient survival (PFS and OS), suggesting that performing NGS testing as early as possible could provide optimal benefits.