Poster session 4. Molecular diagnosis & biomarkers

**P04.04** TARGETING TO TUMOR-ASSOCIATED ANTIGEN ENO1 PROVIDES PREVENTIVE AND THERAPEUTIC EFFECTS ON DISEASE PROGRESSION OF LUNG CANCER

N. Y. Shih¹, G. C. Chang², S. W. Tseng³, K. J. Liu¹, K. C. Hsiao¹, H. C. Lin¹
¹National Health Research Institutes, Tainan, Taiwan, ²Taichung Veterans General Hospital, Taichung, Taiwan, ³Chung Shan Medical University Hospital, Taichung, Taiwan

**Purpose:** We previously identified ENO1 as an immunogenic tumor-associated autoantigen which was overexpressed in 95% patients with non-small cell lung cancer (NSCLC). Its expression status is highly associated with the 5-year overall and progression-free survivals of the patients. In this study, we intended to disclose if the ENO1 immune responses were also correlated with the clinical outcomes of NSCLC patients and examined if re-stimulation of the responses might provide preventive and therapeutic immunities against cancers.

**Methods:** A sandwich ELISA was carried out to assay the serum ENO1 autoantibody (ENO1 Ab) of 99 healthy individuals and 184 NSCLC patients. In addition, for evaluation of ENO1 as a potential target for cancer treatment, tumor volume and number of the metastatic colony formation in lungs were measured to determine the preventive and therapeutic effects of the ENO1 cancer vaccine formulated with the CpG adjuvant in xenografted and spontaneous tumor models.

**Results:** The ELISA results revealed that the NSCLC patients had significantly lower ENO1 Ab levels than healthy controls, while there was no difference between the NSCLC patients and healthy controls in total IgG levels. Notably, the NSCLC patients with late stages had markedly lower serum ENO1 Ab levels and poorer prognosis in the overall survival when compared to those in the patients with early stages and healthy controls. Similarly, a consistent conclusion was also obtained in tumor-bearing congenic mice. Vaccination of the BALB/c or AJ mice with mouse-homolog ENO1 (mENO1) recombinant protein with the CpG adjuvant to generate high serum mENO1 Ab titers and cytotoxic T cell activity could result in marked suppression in the growth of tumors expressing mENO1 in xenografted and spontaneous tumor models, respectively.

**Conclusions:** Our data suggest that serum ENO1 Ab level is a potential prognostic factor for the disease staging and overall survival of NSCLC patients. Effective re-boost of the ENO1 immune responses can dramatically enhance antitumor activity leading to alleviation of the tumor malignancy.