Letter to the Editor

Correspondence regarding “Is the prognostic nutritional index (PNI) a useful predictive marker for postoperative complications after lung surgery?” by Dr. X Li and J Chen

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Provenance: This is an invited article commissioned by the Section Editor Shuangjiang Li (Department of Thoracic Surgery and West China Medical Center, West China Hospital, Sichuan University, Chengdu, China).

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We thank Drs. Xin Li and Jun Chen and read with great interest their editorial comment on “Is the prognostic nutritional index (PNI) a useful predictive marker for postoperative complications after lung surgery?” Lung cancer is a leading cause of death that was estimated to have caused 1.76 million deaths worldwide in 2018 (1). Several factors for predicting prognosis have been reported so far. In addition to stage, including lymph node involvement, pleural invasion, or serum tumor markers, nutritional status has also recently been reported to be an important prognostic factor (2-4). It is a somewhat new concept that a clinical characteristic of a patient, not a tumor characteristic, could affect the outcome, while nutrition might be affected by tumor progression with inflammation.

Initially, we identified the preoperative prognostic nutritional index (PNI), which is calculated as 10 × serum albumin (g/dL) + 0.005 × total lymphocyte count (cells/mm^3), as a useful biomarker for postoperative complications and survival in patients who underwent a curative lobectomy for non-small cell lung cancer (5). In that retrospective study, we also found that the PNI was significantly decreased in patients with higher levels of C-reactive protein, which is a frequently used indicator of inflammation. Both overall and recurrence-free survivals showed significant differences, with better outcomes in patients with a high PNI, suggesting that nutrition could be related to lung cancer status.

We further reviewed lung cancer patients who underwent all types of operative procedures, including sublobar resection, in non-small cell lung cancer and evaluated the clinical significance of the PNI again (6). The retrospective analyses of 515 patients showed that the low PNI group had a higher risk of postoperative complications, such as prolonged air leak, pneumonia, and extrapulmonary infection. We adopted a PNI cut-off of 48, which was calculated using the minimum p-value approach, in the previous study (5). In the following study, we divided the patients into 3 groups by the PNI (normal >50, mildly low 45–50, and severely low <45) for detailed analyses (6). The cut-off value for the PNI is controversial, and Onodera *et al.*, who simplified the PNI as the current index, proposed the cut-off as 45 for operative safety and 40 for surgery of digestive organ malignancies (7). Yang *et al.* used the PNI cut-off of 45.5 in gastric cancer, and Nozoe *et al.* found a significant difference in prognosis with the cut-off of 40 in colorectal carcinoma (8,9). Dr. Li commented in the editorial comment in this issue that hypoalbuminemia could be caused by relative ischemia of the small intestine due to the surgical stress after the operation. We can imagine the differences in the postoperative intestinal states between lung and digestive cancers. Thus, it seems reasonable that the PNI cut-off value could vary depending on the site of origin of the cancer.

Finally, we agree that a prospective, multi-center

study using a larger sample size is needed to address the usefulness of the PNI, as Dr. Li suggested in the last paragraph. In addition, a clinical trial to determine whether preoperative nutritional intervention in patients with a low PNI contributes to the prevention of morbidity and the improvement of postoperative survival outcomes would be interesting.

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Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

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