

Reply to comment on “Risk factors for intensive care unit readmission after lung transplantation: a retrospective cohort study”

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We appreciate Qazi and Amin [1] for their interest in our study [2]. We agree that a better prognosis for lung transplantation (LT) patients requires consideration and management of various perioperative factors. As noted in the Introduction section, we focused on the postoperative state of LT patients, showing substantial change due to surgery, rather than their preoperative condition. We assessed the patients’ baseline pulmonary function, educational level (as a proxy for socioeconomic status), and Eastern Cooperative Oncology Group performance status (a comprehensive measure of overall health status that incorporates the modified Medical Research Council dyspnea scale) to obtain a more complete understanding of their condition. However, we did not examine and document the patients’ muscle strength or emotional state between 2012 and 2017. We have recently evaluated and optimized measurement of patients’ physical and mental status with patient-centered techniques before and after surgery, as we recognize their crucial impact on prognosis [3].

Considering the possibility of various complications following LT, we acknowledge the importance of close observation and meticulous management, in conjunction with rehabilitation protocols. Since the introduction of LT, various rehabilitation programs have been implemented and refined. However, at the time of study performance, such programs were not fully established, and there were numerous missing data points regarding patients’ respiratory and physical status, which posed a challenge for our retrospective research.

Nevertheless, we suggest that major postoperative complications occurring early after LT, which can significantly affect recovery trajectory, have been identified through causes of intensive care unit (ICU) readmission or in-hospital mortality, as presented in Figures 2 and 3 of our article [2]. Except for rejection, immunosuppressant-related infections, and rehabilitation issues, individualized measures for specific complications should be taken following LT, rather than relying solely on general treatment protocols for LT patients.

LT recipients in our study were managed according to the established protocol, including immunosuppressive therapy with administration of tacrolimus, mycophenolate mofetil, and steroids. Antibiotics such as teicoplanin or vancomycin and cefepime were administered for 5 days after surgery to prevent bacterial infection. Ganciclovir, later switched to oral valganciclovir, to prevent cytomegalovirus infection and itraconazole to avoid fungal infec-

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tion were given for six months. In addition, trimethoprim/sulfamethoxazole was given to prevent *Pneumocystis jirovecii* infection. Our study would have been more comprehensive if we had included these aspects. However, our protocol cannot be generalized to LT recipients in other medical facilities due to potential differences in epidemiology and antibiotic resistance patterns.

Numerous studies have identified hospital length of stay (LOS) and unplanned rehospitalization as potential predictive factors for mid- and long-term outcomes following LT [4,5]. However, few studies have examined the prognostic factors during the early postoperative period after LT. We believed identifying and modifying the factors that impacted early outcomes following LT should be a priority to improve mid- to long-term outcomes. Therefore, we aimed to investigate the risk factors for ICU readmission during the initial hospitalization period following LT, rather than considering the entire hospital LOS or discharge frailty. Upon reviewing our study population, patients who were readmitted to the ICU had a significantly longer hospital LOS after surgery (32 days [23–45] vs. 107 days [61–151], $P < 0.001$). This implies that mitigating ICU readmission via early risk factor modification may reduce hospital LOS and ultimately improve patient prognosis.

Last, we also mentioned that ours is a retrospective study conducted on a relatively small number of patients at a single center and is inherently limited in its research design. Therefore, we advocate for additional large-scale, prospective, multicenter studies or artificial intelligence models using extensive data for predicting the prognoses of LT recipients.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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AUTHOR CONTRIBUTIONS

Conceptualization: HBK, JK. Formal analysis: HBK. Data curation: HBK. Writing–original draft: HBK. Writing–review & editing: SN, HCP, HJ, JK.

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