



# N-terminal pro B-type natriuretic peptide and the risk of acute kidney injury after lung cancer surgery

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*Comment on:* Cardinale D, Cosentino N, Moltrasio M, *et al.* Acute kidney injury after lung cancer surgery: Incidence and clinical relevance, predictors, and role of N-terminal pro B-type natriuretic peptide. *Lung Cancer* 2018;123:155-9.

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As of recent, a growing attention is being paid to the importance of preoperatively evaluating patients prior to lung resection. Indeed, numerous studies have sought to identify reliable predictors of patients who are at a high risk of developing postoperative complications. In fact, despite recent improvements in diagnosis, staging and treatment (1,2), postoperative complications remain a frequent and demanding challenge for general thoracic surgeons in their daily practice, being responsible for longer hospital stays and higher overall patient costs (3). B-type natriuretic peptide (BNP) in major non-cardiac surgery has already been investigated and results have suggested its value in predicting cardiopulmonary complications (4-7). However, the influence of acute kidney injury (AKI) has not been thoroughly investigated.

In the present article entitled “Acute kidney injury after lung cancer surgery: Incidence and clinical relevance, predictors, and role of N-terminal pro B-type natriuretic peptide” (8), by Cardinale *et al.*, the Authors sought to shed light on the incidence, clinical relevance and risk factors of AKI in patients undergoing pulmonary resection for non-small cell lung cancer (NSCLC). Specifically, they estimated the accuracy of N-terminal pro BNP (NT-proBNP) in the prediction of AKI. In this prospective, observational study including 2,179 NSCLC patients in a single centre, the Authors report that 222 (10%) patients developed postoperative AKI, defined according to the AKI Network classification. These patients were associated

with a high incidence of complicated course (35% *vs.* 16%;  $P < 0.0001$ ) and a longer hospital stay ( $10 \pm 7$  *vs.*  $7 \pm 4$  days;  $P < 0.0001$ ) compared to patients without AKI. Furthermore, they revealed that the combined evaluation of preoperative serum creatinine and NT-proBNP measured before and soon after surgery, were able to accurately predict the risk of AKI [AUC 0.74 (95% CI: 0.71–0.77)].

To date, only three retrospective studies have focused on this topic after thoracic surgery (9-11), reporting an AKI incidence range of 3–9% of patients who had undergone lung surgery for cancer. However, these past studies were limited by the nature of the study, the old series adopted for the analysis and the different criterion used for the AKI classification.

The merits of these results are that they can be applied to clinical practice. Specifically, the results suggest that the risks of AKI can be accurately predicted by the combined evaluation of preoperative serum creatinine and NT-proBNP. In fact, patients who developed AKI were more likely to experience cardiorespiratory complications and bleedings requiring transfusions and to undergo reoperation. Moreover, AKI, as expected, was mainly related to preoperative comorbidities and to the extent of lung resections. Especially elderly male patients, with hypertension, low estimated glomerular filtration rate (eGFR) and who had undergone pneumonectomy were more likely to experience postoperative AKI. More importantly, the authors report that “20%” of

pneumonectomies had AKI in the postoperative period.

The implications of these reported results include that we might be able to better screen for patients who are at a high risk of developing postoperative complications. If so, this would have an impact on shortening hospital stay and reducing overall patient costs.

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### Footnote

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

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