However, a potential important confounding factor may explain a part of their results: undiagnosed pulmonary embolism (PE), mimicking (or induced by) COPD exacerbation. Troponin and BNP are factors associated with poor prognosis in PE. COPD is associated with an increased risk of deep venous thrombosis and PE particularly during exacerbation) and with an increased risk of fatal PE. In particular, COPD is associated with increased risk of death from undiagnosed PE.

The real incidence of PE during exacerbation of COPD is not clearly known, ranging from 1.5% to 24.7% corresponding to the proportion of COPD exacerbations. Troponin and BNP are elevated in inpatients and outpatients with suspected or confirmed PE. Cardiac biomarkers are often associated with the presence and severity of PE, and they can be used to detect thromboembolic events in this population. They are also useful in the early diagnosis and management of PE.

### Authors’ response

We thank Bertoletti and colleagues for raising the important issue of pulmonary embolism (PE) in the exacerbation of chronic obstructive pulmonary disease (COPD).

Although we did not routinely investigate PE in our cohort, we excluded any patients with suspected or confirmed PE from the study. Unfortunately, it is difficult to detect thromboembolic events in this population and it is possible that we included some patients with subclinical pulmonary emboli. It is also plausible that this contributed to the association between elevated cardiac biomarkers and mortality. However, we think that this is unlikely to be the only mechanism.

Thromboprophylaxis was administered to some patients during their admission depending on their immobility and other risk factors, but this would not have influenced the NT-proBNP or troponin T results obtained on presentation. We did not collect information on pre-existing anticoagulation therapy on admission to the study.

Further research into the mechanism linking elevated cardiac biomarkers and mortality in COPD exacerbation is needed. We agree with Bertoletti and colleagues that investigating the contribution of concurrent PE is important, as this is something that can be treated.

### REFERENCES


### Correlations

do10.1136/thoraxjnl-2011-201054c.179corr1


do10.1136/thoraxjnl-2011-201054c.183corr1


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