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Usefulness of Procalcitonin at Admission as a Risk-Stratifying Biomarker for 50-Day In-Hospital Mortality Among Patients With Community-Acquired Bloodstream Infection: An Observational Cohort Study

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Background

- Bloodstream infections represent a leading cause of death and are reported in a high proportion of patients with community-acquired sepsis and septic shock. Risk stratification and prognostication are paramount in patients with septic conditions, as high-risk patients may benefit from earlier clinical interventions.
- A previous large cross-sectional study on more than 35,000 consecutive patients showed that plasma procalcitonin was a valuable biomarker for excluding bloodstream infections.[1]
- To date, no study has assessed the effectiveness of procalcitonin at admission as a risk-stratifying biomarker for predicting 50-day in-hospital mortality among patients with community-acquired bloodstream infections.

1. Oussalah A, et al. Medicine (Baltimore). 2015 Nov;94(44):e1774.

Methods

- We carried out a retrospective, observational cohort study on all consecutive patients with bacteriologically proven community-acquired bloodstream infections hospitalized between 2006 and 2012.

- We aimed to assess the association between plasma procalcitonin at admission and 50-day in-hospital mortality.

- Patients were included in the analysis if they had received a blood culture testing within 48 hours of hospitalization with a concomitant procalcitonin assay (time lapse < 12 hours between the two tests).

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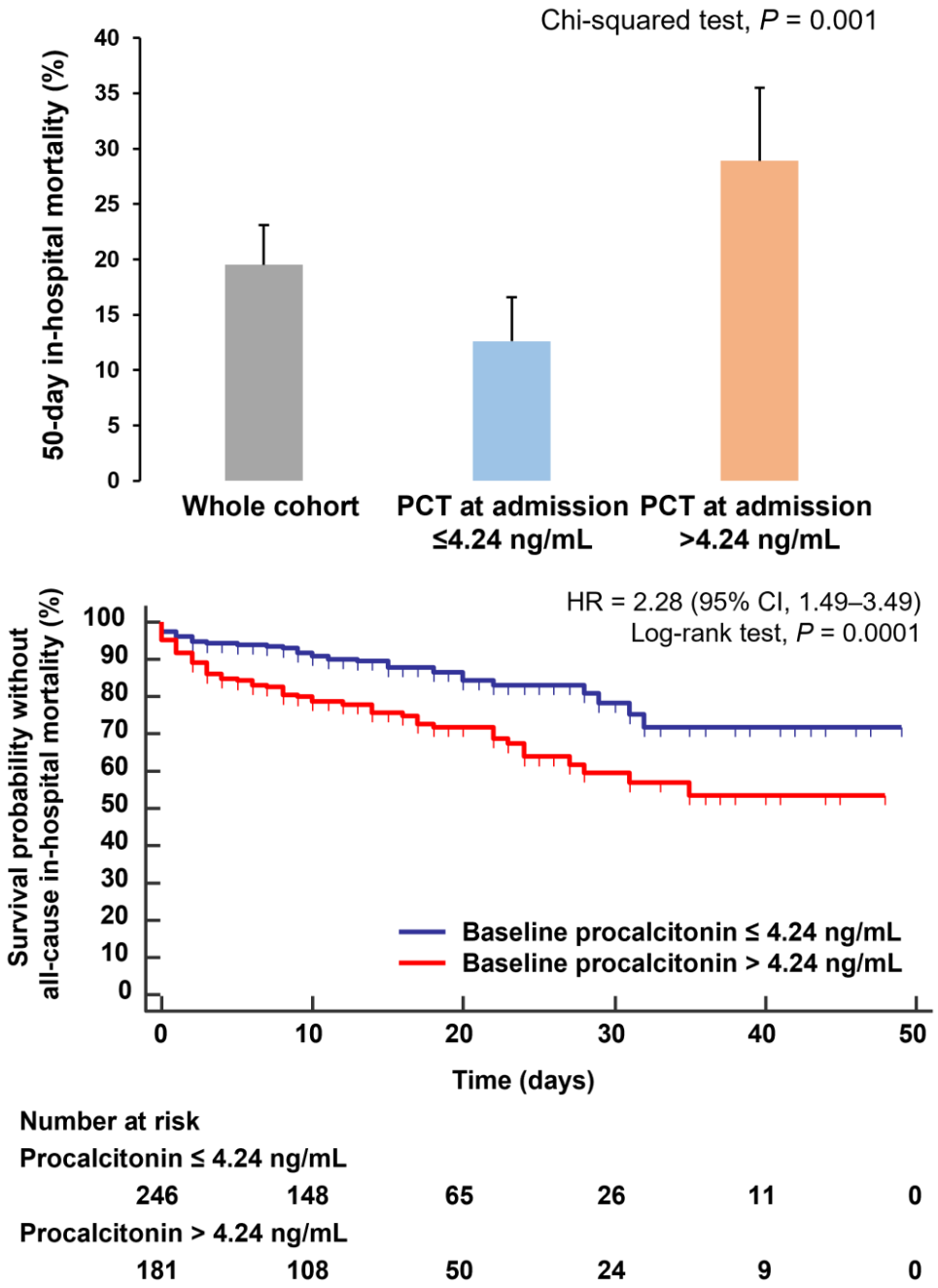
Results #1

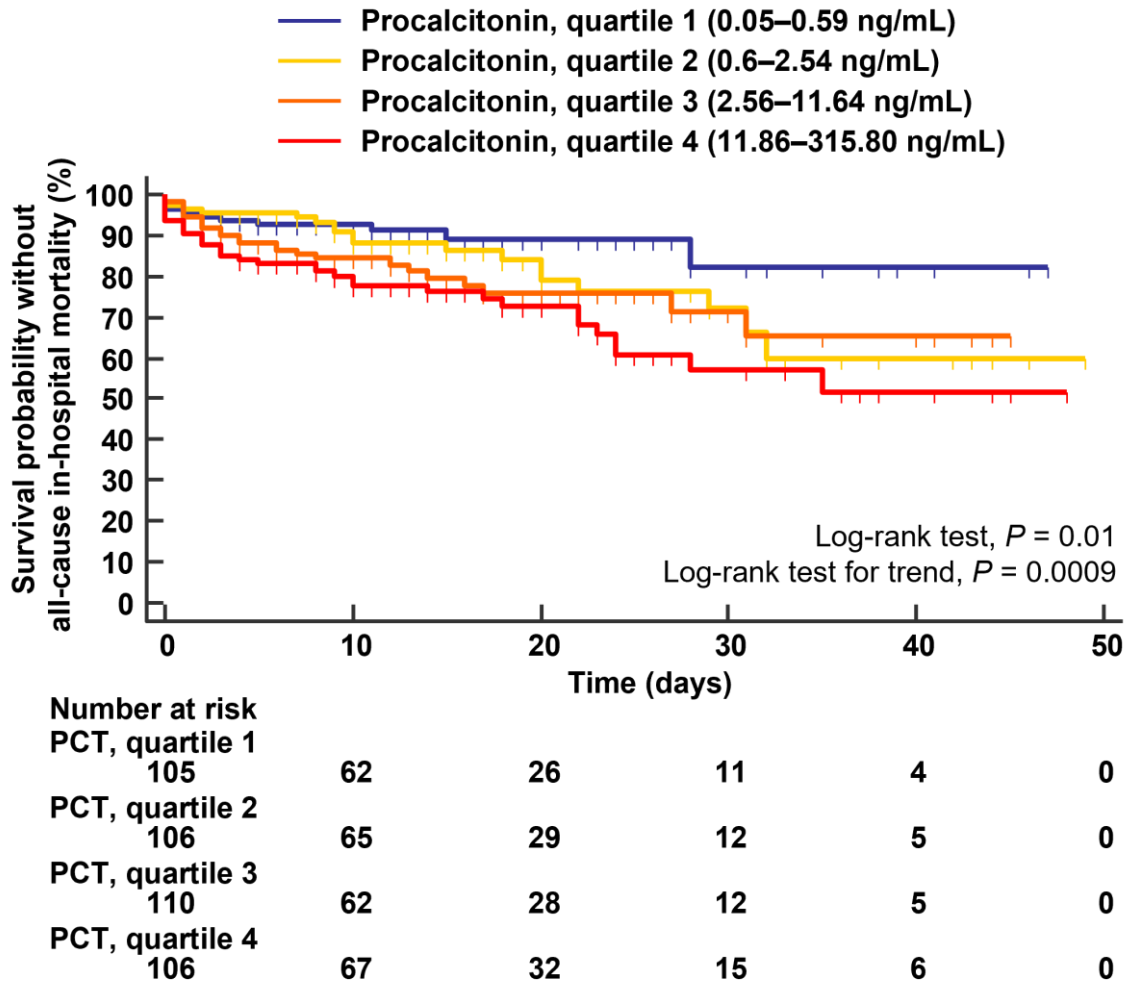
- Between January 1, 2006, and December 31, 2012, 1593 patients were admitted to one of the healthcare facilities of the University Hospital of Nancy from home or through the emergency department and had positive blood cultures with concomitant procalcitonin assay. Among them, 452 met the selection criteria and were included in the analysis.

- A baseline procalcitonin > 4.24 ng/mL was independently associated with an increased risk of in-hospital mortality (absolute difference, +16.3%; 95% CI, 8.8%–24.0%; P < 0.0001) both in multivariable logistic regression analysis (odds ratio, 2.58; 95% CI, 1.57–4.25; P = 0.0002) and multivariable Cox proportional hazard regression analysis (hazard ratio, 2.01; 95% CI, 1.30–3.11; P = 0.002).



Results #2

- In sensitivity analyses, baseline procalcitonin quartiles were independently associated with 50-day in-hospital mortality both in multivariable logistic regression analysis (odds ratio, 1.47; 95% CI, 1.17–1.85; P = 0.001) and multivariable Cox proportional hazard regression analysis (hazard ratio, 1.31; 95% CI, 1.07–1.60; P = 0.008).



Conclusion

- Our data provide the first evidence on the usefulness of plasma procalcitonin at admission as a risk-stratifying biomarker for predicting 50-day in-hospital mortality among patients with community-acquired bloodstream infections.