Title: Inflammatory parameters predict prognosis in infective endocarditis but do not allow for individual prediction of etiology

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Reviewer's report:

Review for BMC- Infectious Diseases (MS: 1967081357746657)

Inflammatory parameters predict prognosis in infective endocarditis but do not allow for individual prediction of etiology.

Background

Despite changes in the profile of infective endocarditis (IE) over the years and the progress in medical and surgical treatment, IE remains very severe and still life- threatening disease with high morbidity and mortality. In the era of the risk stratification for ex. acute coronary syndromes, also patient stratification with IE for early and late outcome is very important. Available evidence from a systematic review and meta-analysis of the randomized trial about risk factors in the light of biomarkers as predictors in the field of IE, is very poor/zero. Therefore any new development and/or validation of a time- dependent risk model – clinical (age, heart failure, severe comorbidities etc.) or biomarkers (CRP, WBC, trombocytopenia, PCT, troponin, pro – BNP...) predictors at admission for predicting mortality and/or complications, mainly in the early period of the IE is very important and useful for every day clinical practice. Increasing procalcitonin (PCT) levels have been demostrated to be associated with bacterial infections triggering a systemic inflammatory reaction in the body. PCT as a prognostic marker in the setting of the IE has not yet been investigated.

Summary

1. The present study, for the first time, reports data from 50 patients with IE and with increased PCT at admission, for clinical outcomes (in-hospital mortality and complications) and its correlation with microbiological aetiology.

2. New information: for the first time this study show that in IE initial (cut-off) value of PCT >0,5ng/ml, is a useful predictor of poor outcome (high incidence - death or valve replacement or severe complication mainly infectious). PCT >0,5 ng/ml should raise the suspicion of Staphylococcus aureus as the aetiological pathogen, whereas PCT levels <0,5ng/ml make staphylococcal infection unlikely ( PCT does not correlate with aetiology( microbe) of the IE).

Conclusion

1. Taken together I recommend this excellent and useful study with important
message for every-day clinical practice to be accepted without revision and published. I have one little condition – the authors must include five references - number 22,23,24,25,26 to the text.

2. Results of this study with PCT as a prognostic biomarker allow-us to start - with sensitivity of 73%, specificity 79% and negative predictive value of 73% for in-hospital death and complications – as soon as possible, if necessary, antimicrobial empiric therapy for grampositive microorganisms (Staphylococci mainly aureus, Streptococci, Enterococci – mainly faecium) (but, rapid identification of the causative pathogen is crucial, therefore blood culture remains the gold standard for bacteriological diagnosis of IE).

3. Results of this study may ameliorate some our early clinical therapeutic and organisation (CCU, ICU) decisions.

4. Future studies with some or all biomarkers (PCT, troponin, pro – BNP, CRP) should focus on the mortality and complications in the high-quality „large“-scale clinical trials with early and long-term follow-up.

5. All points – study question posed by the authors, the methods of the study, discussion, conclusions, some limitations, references- bibliography, abstract are clear, relevant, concise and satisfactory for me. The writing of this paper is excellent.