Reviewer's report

**Title:** Improved Hyponatremia after Pericardial Drainage in Patients Suffering from Cardiac Tamponade

**Version:** 5  **Date:** 2 December 2015

**Reviewer:** Bernhard Maisch

**Reviewer's report:**

The included cover letter does not respond to the comments of my review. There are no changes in content or discussion responding to my comments either. Have the authors received my comments to the first manuscript at all? There is only the inclusion of the ESC Triage Score.

My previous comments were:

- So 38 out of 86 patients with the diagnosis had to be excluded (44%). This is a serious draw-back of a retrospective analysis. Within these limits the authors describe the almost immediate improvement and normalisation of hyponatremia in patients with clinical cardiac tamponade after pericardiocentesis, which was primarily so in a subgroup of patients with malignant pericardial effusion. There are a number of additional concerns with this contributions:

1.0 Major compulsory revisions:

1.1 Fortyeight patients had clinical tamponade based on hypotension (systolic blood pressure less than 90 mm Hg), pulsus paradoxus (a decline of more than 10 mm Hg in inspiratory systolic blood pressure), and an increased jugular venous pressure. But in echocardiography only 33 of them had echocardiographic signs of chamber compression in the presence of pericardial effusion. This substantial discrepancy in 31% of patients is hard to believe or to accept.

1.2 The authors must explain chamber compression. Does this include the right and/or left atrial chamber or only the ventricles. Compression of the right atrium occurs first, often before there is a clinical sign of tamponade (see also the European Society of Cardiology Guidelines on the diagnosis and management of pericardial disease, Maisch et al in the European Heart Journal 2004, 25(7); 587-610. The authors are kindly advised to read them and to read also the dedicated issue on Pericardial Diseases in Heart Failure in Heart Failure Reviews 18, May 2013 No. 3.
1.3 The distinction pericardial fluid between malignant and non malignant form of pericardial effusions is nice but insufficient. Although the type of malignancy has been described in table 1, some parts remain unclear: a) The type of the other effusions found has to be elucidated e.g. viral or bacterial or tuberculous or hydropericardium. b) The term idiopathic pericardial effusion is just a sign of incomplete aetiological work-up. c) The term malignancy related in table 1 does not clarify if the malignant cells were also detect in the effusion itself.

1.4 Therefore the cytology of the pericardial fluid should be described in detail apart from the type of malignancy suspected. Was the cytology in the pericardial fluid identical to the proposed underlying malignancy. Was radiation induced pericardial effusion malignancy related or "idiopathic" ? (see also 1.3)

1.5 PCR on microbial pathogens should have been performed in the fluid or tissue samples from peri- or epicardiam or should be performed if samples were stored.

1.6 ADH levels should have been measured or this should be performed if samples were stored.

1.7 BNP levels in the peripheral blood should have been measured or should be performed if samples were stored.

1.8 intrapericardial pressures before the pericardial tab and after should be documented

1.9 LVEDP or PCP should have been measured before and after the pericardiocentesis to document compression or decreased wall tension.

2.0 Minor Essential Revisions

2.1 The authors stated several limitations of the study, obviously those which were also asked for from 1.5-1.9. But they should able to have at least cytology described in more detail, intrapericardial CRP and other inflammation markers should also be listed.

Since so many details are missing the hypothesis of the authors on the cause of hyponatriemia remains a matter of speculation despite the statistics performed. From data itself one could also speculated that the underlying malignancy would cause hyponatremia alone. There the authors should present patients with a malignancy without pericardial tamponade or with pericardial effusion and hyponatremia as an additonal control group.

**Level of interest:** An article of importance in its field
Quality of written English: Needs some language corrections before being published

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.