Reviewer's report

Title: Tinnitus in elderly patients and prognosis of mild-to-moderate congestive heart failure: a cross-sectional study with a long-term extension of the clinical follow-up

Version: 1 Date: 4 October 2010

Reviewer: Berthold Langguth

Reviewer's report:

In this study the authors investigated the relationship between tinnitus and congestive heart failure (CHF). They found that among patients with CHF the presence of tinnitus was associated with reduced blood pressure, reduced left ventricular function, increased BNP, and increased use of diuretics, angiotensin receptor blockers and NSAIDs. Most important, combined one-year mortality and hospitalisation was significantly higher in patients with tinnitus.

These data are new, may contribute to a better understanding of the pathophysiology of both diseases and they are clinically relevant.

Major compulsory revisions:

1. The main critic from my side is that the authors interpreted their results in the sense that the data support the assumption that tinnitus is an indicator of insufficient inner ear blood perfusion. This assumption is not pathophysiologically supported, at least not for the majority of tinnitus cases. Also from the reported associations no causal relationship can be deducted. Also the interpretation that onset of tinnitus can be considered as an indicator of decline in cardiac performance is not sufficiently supported by the data.

The main observation (more severe CHF and poorer outcome in tinnitus patients) is in my opinion much more likely to be mediated by tinnitus related distress. The possibility that the autonomic nervous system is involved in mediating the relationship, is only shortly mentioned in the last paragraph of the discussion. Indicators for chronically increased stress levels (Hebert 2004, 2007, 2010) and reduced heart rate variability (Datzov E et al. 1999) have been reported among tinnitus patients. Also tinnitus is frequently associated with depression which is known to be a negative predictor for CHF (Jiang et al. Circulation 2004).

Since stress is also known as a risk factor for the development of tinnitus, the higher tinnitus prevalence among CHF patients in advanced NYHA classes could be explained by higher stress levels in these patient groups.

Chronic stress and depression as a possible link between tinnitus and CHF should be proposed as a possible and also probable explanation for the presented data. Unfortunately no information about tinnitus distress or tinnitus severity is given. This information would be extremely helpful for investigating the
role of tinnitus related stress on CHF.

2. Also other possible explanations for reported associations are not mentioned. So the relationship between NSAIDs and tinnitus could be explained by the well known induction of tinnitus by salicylate. Diuretics are also known to interfere with inner ear function and such a relationship cannot be excluded for angiotensin receptor blockers.

3. in Table 2 there seem to be wrong data (Warfarin treatment in the “tinnitus no” group, Beta blocker treatment in the “tinnitus yes” and “tinnitus no” group. Also the column “No” should be removed since it gives no additional information.

minor esential revisions:

1. Background: the prevalence rates should be referenced, also the statement about reduced blood flow in the ear as trigger for tinnitus should either be removed or referenced.

2. Statistical analysis: 4th line: remove (AU: as meant?)

3. Results and discussion: 10th line: As expected… sentence should be corrected

Quality of written English: Needs some language corrections before being published

Statistical review: No, the manuscript does not need to be seen by a statistician.

Declaration of competing interests:

I have no conflict of interest