Reviewer's report

Title: Prevalence and risk factors of abnormal left ventricular geometrical patterns in untreated hypertensive patients

Version: 2  Date: 28 April 2014

Reviewer: Katrina Poppe

Reviewer's report:

Major compulsory revisions

a) A threshold of RWT > 0.43 was used to define concentric hypertrophy or remodelling. The reference provided for this threshold seems to be that of de Simone et al. Hypertension 2010;56(1):99-104. That paper in turn references the thresholds used in the LIFE study (Gerdts et al. Eur J Echo 2008;9:809-) which actually defined the threshold for an increased RWT as # 0.43. A threshold of # 0.43 is also consistent with the threshold of > 0.42 in the joint ASE/EAE recommendations for LV quantification (Lang et al. JASE 2005; Lang et al. Eur J Echo 2006).

In a metric that spans a relatively small range, a difference of 0.01 in a key categorising variable may be important. Could the authors please consider either recoding their patient groups to be consistent with standard definitions, or at least assessing if changing the definition makes a difference to their result (and include a comment in the manuscript).

The authors note how the prevalence of LVH in their subject group is towards the lower end of the range of other untreated hypertensive cohorts. It would help the discussion if potential reasons for this were expanded on. One possible reason may be different definitions of LVH?

b) Could you please provide a clearer description of the multivariable models? Please add a definition of the outcomes being modelled with logistic regression. I believe this is LVH (concentric or eccentric) vs no LVH (concentric remodelling or normal) for the results presented in Table 4? And was it each of Concentric remodelling vs not concentric remodelling, Concentric hypertrophy vs not concentric hypertrophy… etc, for the three models presented in Table 5? All of the potential covariates that were included in the model should be presented in Tables 4 and 5, and not just those with a statistically significant association with the outcome. The column of p values will show which are statistically significant.

c) You suggest that low HDL may have a negative effect on LVH. The OR for HDL was <1, therefore increasing levels of HDL are associated with a decreased risk/odds of LVH. Could you please re-phrase your interpretation of this point.

d) The abstract is a little unclear. Also please add that the results are relevant to the 1641 people with untreated hypertension.
Minor essential revisions

a) Odds ratios in the results section, and Tables 4 and 5, are reported to 3 decimal places. This is unnecessary and only 2 dp, at most, are needed. Also, the superscript denoting whether $p < 0.05$ or $p < 0.01$ is not needed as you also present columns of $p$ values. Please add the units that each variable is modelled in. For example “Age, year”, “Sex, female”, “SBP, mmHg” etc. The unadjusted ORs are not referred to in the text so do they need to be included?

b) The statistical methods section mentions “a t test”. Should this be a Student t-test?

c) May I suggest that the last paragraph in the discussion before the conclusion, starting “In addition, another aspect of the …”, be moved before the limitations. It is a point worth raising and should be included in the body of the discussion.

Level of interest: An article whose findings are important to those with closely related research interests

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 declare that I have no competing interests