Reviewer’s report

Title: Association of the smoking status with parameters of vascular structure and function in adults. Results from the EVIDENT study.

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Reviewer: Grzegorz Bilo

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The paper summarizes the results of an analysis of data from EVIDENT population study aimed at assessing the relationship between smoking status and vascular alterations (cIMT, PWV, AIx, ABI). The main conclusion of this analysis is that cIMT is the variable which best correlates with smoking status.

Major Compulsory Revisions

1) As correctly reported by the Authors in the discussion the associations between smoking and vascular alterations have been quite extensively studied in the past. Please explain more clearly what is the new information that this study adds.

2) Sample size. Although the sample size reported (e.g. in the abstract) is of 1553 subjects, only in 265 of them complete assessment, including cIMT and PWV, was performed. Since the main conclusion regards cIMT, such presentation of the data is misleading. It is also confusing when looking at Table 1 where part of the data are shown for 1553 and part of them for 265 subjects. A demonstration is needed that the subgroup of 265 subjects is representative of the main population. If this is not the case only the data for 265 subjects may be used, in my view. Also, indicate N for each variable in Tables 2 and 3.

3) Smoking status was only ascertained on a current/ex/never smoker basis, as reported by the patients. This surely is a limitation of the study – objective assessment of actual smoking (e.g. by CO analysis in the expired air) would be useful, although not easy to achieve. However, a more complete quantitative information of smoking exposure should have been obtained (package-years). Also information on passive smoking exposure would be useful. Please acknowledge the above as study limitations.

4) Data presentation – since the main conclusion is based on multivariate analysis, a more detailed presentation of multivariate models (as tables) is essential. In my view the data in Table 3 and Figure 1 provide the same message, which is helpful as a background for the other data, but if more space is needed one of them could be removed.

Minor Essential Revisions

5) The authors should specify more clearly how the smoking status was used in the multivariate analysis – was it used to create categories (so the analysis could be basically an analysis of covariance) or was it used as an ordinal variable. If
the former is true I would expect post-hoc contrasts to be show between the three categories (I understand that p=0.009 refers to overall comparison between the three groups so it does not directly imply which of the groups differed from the others meaningfully) – these contrasts should be also shown in Figure 2.

6) Statistical analysis. HDL-C was significantly lower in smokers. Unless there is any specific reason it should be included in multivariate analyses.

7) Please provide a better explanation for Figure 2 – do the points represent LS means? The bars SE or CI?

Discretionary Revisions

8) Statistical analysis. I am always concerned whenever multivariate analyses show results which are not consistent with univariate data and this is the case in this study: in Table 1 current smokers have the lowest mean IMT among the three groups. The authors suggest that the opposite finding in the multivariate analysis is due to the fact that smokers are younger and have lower BP - thus the expected cIMT values should be even lower. However, as they are, the results do not seem very convincing. Possibly these findings could be supported by e.g. comparing the cIMT values between smokers and nonsmokers of comparable age (e.g. within 5 years wide age strata) although sample size may be inadequate for such an analysis.

Level of interest: An article of limited interest

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

Statistical review: Yes, but I do not feel adequately qualified to assess the statistics.

Declaration of competing interests:

I declare that I have no competing interests