Reviewer’s report

Title: Passive Tobacco Exposure Impairs Symptomatic Improvement in Patients with Chronic Angina Undergoing Enhanced External Counterpulsation

Version: 2 Date: 24 June 2008

Reviewer: Ryan Lennon

Reviewer’s report:

General
--------------
The authors report from a retrospective study of prospectively collected data that non-smokers undergoing EECP therapy have less treatment benefit if they are exposed to second-hand smoke.

The study has several important limitations and its conclusions should be regarded as hypothesis generating, and far from definitive. In fact, the second-hand smoke effect could probably be downplayed, and should be regarded as a "living with a smoker" effect.

Major Compulsive
-----------------

1. General
Why did the authors choose to report this particular endpoint, improvement in anginal class, over, for example, reduced use of anti-anginal medication, or QOL indices? What were the results of these measures between the two groups?

2. The authors need to give the definition of "non-smoker" that was used for the registry. A limitation of concern is the reliability of self-report, especially if the subject claims to have quit but is living with a smoker. How certain are the authors that the effect is really SHS and not direct smoking in patients who simply are trying to avoid a "lecture" about the hazards of smoking? It may be helpful to report the percentage of never smokers and former smokers and to assess whether the EECP effect is different in them in the presence of SHS.
3. Page 6, Statistical analysis
"Changes in continuous variables were analyzed by paired t-tests." I don't think such analyses needed to be performed. Two-sample tests of continuous variables were apparently performed, and the authors should comment on the test used (e.g. unpaired t-test, rank sum test...).

4. Page 6, Statistical analysis
Angina class is an ordinal variable and should be tested with either a Mann-Whitney rank sum test or an Armitage trend test to account for the ordered nature of its categories. The test chosen should be noted.

5. Page 6, Statistical analysis
"Multivariate logistic regression..." Please use either "Multivariable logistic regression" or "Multiple logistic regression" consistently throughout the paper. These terms refers to multiple explanatory variables, where as "multivariate" analyses technically refers to the analysis of multiple dependant variables.

6. Page 6, Statistical analysis
"Multivariate logistic regression modeling to predict failure to improve anginal status was performed." It is here that the authors should comment on how variables were screened and selected for the model. Were non-linear associations between continuous variables and the endpoint inspected and modeled?

7. Page 6, Statistical analysis
Presumably some patients died on follow-up. How were they handled for the analysis of the primary endpoint? If no patients died on follow-up, this should be stated in the results.

8. Page 6, Statistical analysis
Presumably some data values were missing? What was the extent of missingness and how was it handled in the analyses, especially the multiple regression model.

9. Tables and Results
In the tables and text, report actual p-values rather than "NS", "p<0.05", and "p<0.01". The p-values have been calculated - there is no reason to keep them from the reader. Report p-values>=0.10 to two
significant digits, p-values<0.10 to three significant digits.

10. Figure 1
The figures leave something to be desired. The lone figure is essentially a plot of three numbers. I recommend the following:
a) Would like to see a plot of the changes in anginal class for SHS and non-SHS non-smokers. Here is an idea of what may be revealing, though the authors are welcome to entertain other approaches: create a bar plot with a bar for each SHS group/baseline anginal class combination. The bar spans an axis from 0 to 100 and is broken and colored within according to the post-treatment anginal class percentages. This way the reader could see how the distribution of post-treatment anginal class for patients with a pre-treatment class of IV varies by SHS group. The authors may have to combine the I/II pre-treatment classes.
b) Another useful plot would be simply a bar plot of post-EECP anginal class for the three groups.

11. Page 8, 1st para.
The authors should present the entire model results, not just the estimates for those variables that were statistically significant. Also, completion of EECP treatment should not be in the model. When the physician is trying to assess whether a patient is a good candidate for EECP, they cannot know for certain whether the patient will complete the treatment. Further, if SHS does reduce the efficacy of EECP, then SHS patients are probably less likely to complete treatment due to dissatisfaction with symptom relief - meaning that failure to complete is more of a treatment outcome itself than a treatment choice. Including this as a predictor is likely "blocking" significant associations of true baseline variables with the outcome.

Were diabetes, prior CABG, and HF included in the model? The last paragraph of the background indicates that they have been found to be predictors of extent of EECP benefit.

Minor Essential
13. Page 9
"analysese" should be "analyses"

Minor Discretionary

14. The definition of SHS requires that the subject be living with another person. This presents some potential limitations which perhaps should be commented on in the paper. Subjects who live alone are clearly not exposed to SHS in their household, nor are they exposed to any other bad habits of a cohabitor. If smokers are more prone to, for example, poor diet or lack of exercise, then those living with them may have pressure to live similarly (re the NEJM "obesity is contagious" article). Hence it cannot be discerned whether the lack of EECP benefit is due to second-hand smoke, or just "second-hand lifestyle".

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

**Quality of written English:** Acceptable

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

**Declaration of competing interests:**

I declare that I have no competing interests