Reviewer's report

Title: Do changes in atmospheric pressure and temperature relate to the incidence of aortic dissection?

Version: 1  Date: 5 January 2005

Reviewer: Matthew Bown

Reviewer's report:

General

This is an interesting paper but needs further work, mainly in the area of the statistical analyses performed.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

The authors need to state how many patients were admitted with aortic dissections over the study period who did not undergo surgery (the 23 patients in the study were all operated upon). These are an important part of the incidence of the condition. If these are not included the paper should be titled "... the incidence of operations for aortic dissection?"

The authors have used mean monthly data centred on the time of the operation. The full month prior to the operation would give a better indication of the prevailing atmospheric conditions. The atmospheric conditions after the time of dissection should have no effect on the onset of dissection.

Variability of atmospheric pressure is a meteorologically defined measure of the rate of change of pressure and this should be examined (variability is the daily pressure range divided by the daily mean, multiplied by standard atmospheric pressure (1013.25 mb))

An indicator of what measures (if any) were used to control for multiple hypothesis testing should be given and this weakness acknowledged in the discussion.

The reasons for choosing to compare the mean 24 and 48 hour indicators with only the mean monthly indicators should be given. It may be that a sudden change in the indicator being examined between 48 and 24 hours prior to dissection may be related to the onset of dissection and these should be compared.

Table 1 is redundant as these are obvious from tables 2 and 3. Tables 2 and 3 should give an indication of the number of observations made for each comparison. The Wilcoxon column in table 2 is redundant.

No statistical test has been performed on the data presented in figure 1 to confirm that there was no statistical variation in monthly incidence. This should be included (Chi-squared).

In both the abstract and discussion the authors state findings as if they are positive that they have not demonstrated to be significant by their own definition (page 2, lines 15 and 18), (page 10, lines 11 and 15). These should be removed.
Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

The numbered list in the methods should be tabulated.

P-values should be quoted to less decimal places (2 or 3 depending on the editors wishes)

The Y-axis on figure 1 should have the markers for each 0.5 of a dissection removed as these are meaningless.

Discretionary Revisions (which the author can choose to ignore)

It may be more meaningful to compare variation in atmospheric pressure/temperature close to the time of dissection with the mean values for the whole period of the study.

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions

Level of interest: An article of limited interest

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:

I declare that I have no competing interests