Reviewer’s report

Title: Phono-spectrographic analysis of heart murmurs in children

Version: 1 Date: 3 December 2006

Reviewer: Andres Jaussi

Reviewer’s report:

General
This is an interesting article with two major goals: 1) improving screening of pathological heart murmurs by an electronic recording and analysis of auscultation findings in order to reduce the number of unnecessary cardiological referrals and echocardiograms; 2) the same recordings as an educational tool.

ad 1): sensitivity of 90% may well be the level of a trained pediatrician but is to consider suboptimal as an "isolated" screening tool. ad 2): this aspect has not been underscored enough.

Suggestions, proposals:
Methods: the randomization of patients is not clearly described. The technical difficulties of recording are too strongly minimized. in our own experience, this is sometimes not easy at all. As an adult cardiologist I imagine furthermore that it is even tougher in children (?). The analysis must be time-consuming and this should be mentioned. As pointed out by the authors, the absolute acoustic intensity of the phenomena is a considerable problem. By the way, would the specifically developed software become available elsewhere? The yield of the analysis could have been higher if more parameters, such as not only duration of the murmurs but their timing (e.g., free interval after S1), had been used.

Results: the detailed description of the well-chosen examples is welcome and instructive. The plot of the ROC-curves is unusual and should be adapted for an easier lecture.

Discussion: interesting but perhaps too long, an advantage of the electronic journal!? The educational aspects as well as the great importance of integrated clinical and technical approach should be more clearly underscored.

Conclusion: should be more sound! Feasibility is well pointed out, but computer-assisted electronic analysis should be more clearly presented as an additional useful method to the clinical approach and a very interesting educational tool as well. The suboptimal screening yield must be pointed out. Underuse of echocardiography, an non invasive and relatively low-cost tool, must be avoided.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
Description of randomization must be better understandable to the reader.
Conclusion must take into account technical as well as educational aspects.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
Hertz (and not Herz)

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Discretionary Revisions (which the author can choose to ignore)

Adaptation of the ROC-curves

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 importance in its field

Quality of written English: Acceptable

Statistical review: No

Declaration of competing interests:
I declare that I have no competing interests