**Reviewer’s report**

**Title:** Identify the degree of liver fibrosis in CHB patients using an artificial neural network based on routine and serum markers

**Version:** 1  **Date:** 30 January 2010

**Reviewer:** LIU Hongbo

**Reviewer’s report:**

This article deals with the prediction of the state of liver fibrosis in CHB patients using neural networks as the machine learning tool. It is a retrospective study. It includes a large number of patients with biopsy evaluated hepatitis B. Part of the aim for this study is to evaluates the importance of simple laboratory tests for identifying degree of liver fibrosis in individuals with chronic hepatitis B. The results show that liver fibrosis can be accurately predicted using an artificial neural network based on routine and serum markers. Although the use of these classical biochemical indexes for the identification of chronic liver fibrosis had many reports, the importance of this manuscript may be its evaluation of these indexes by neural networks with large number of clinic data, and it is still worthy publication due to its clinical importance.

However, some question needs clarifications and improvements.

- **Major compulsory revisions** -

- **Background**

  1. Second paragraph, line 5-6: the sentence “It would provide very useful information to help reduce the number of liver biopsies of CHB patients.” is hard to understand. In present, liver biopsies is a gold standard and couldn’t be replaced by other methods. How do noninvasive predictive model reduce the the number of liver biopsies. It is better to clarify.

- **Methods**

  2. Sensitivity analysis: There are many different methods that one can use to determine the sensitivity of the different input features. All methods give different results! The authors should test other methods in order to be more confident in what features are the most important.

- **Discussion**

  3. First paragraph, line 6: “the rate of liver fibrosis” is calculated according to the number of patient with liver fibrosis, and non-invasive evaluation of liver fibrosis couldn’t be used to diagnose liver fibrosis of patients. Therefore, non-invasive evaluation couldn’t assess the rate of liver fibrosis in the population.

- **Conclusions**
4. Are the conclusions well balanced and adequately supported by the data? The question posed by the author didn’t be generalized in Conclusions section.

5. Are limitations of the work clearly stated? The study does not carry information on the limitations of the work.

- Minor essential revisions-
- Background
1. Last paragraph, line 1: replace the word 'HbsAg-positive' with HBsAg-positive.
- Discussion
2. Fifth paragraph, line 6: replace the word 'Therefor' with Therefore.
3. In this paper, “non-invasive” should be replaced by “noninvasive”.

- Discretionary Revisions-
1. A very common approach when using neural networks is to use an ensemble approach to increase the performance of the network. The authors should perhaps consider to test ensembles to see if an additional performance increase can be obtained.

**Level of interest:** An article of importance in its field

**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.