Reviewer's report

Title: Change in serum sodium level predicts clinical manifestations of transurethral resection syndrome

Version: 1
Date: 17 February 2015

Reviewer: Marco Gemma

Reviewer's report:

Dear Authors,

the series at your disposal is very interesting and you address an important issue, namely the serum sodium level associated with TURP syndrome symptoms.

Nevertheless the analysis you undertook seems inappropriate. In the “Major Revisions” reported below, I suggest an analysis of your data that could substantially improve your manuscript. Please seek advice of a Statistician, if needed.

Major revisions

1. The Authors aim at studying the predictive value of serum sodium changes on the clinical manifestations of TURP syndrome.

In order to accomplish this goal they should build a predictive model that, given the number of possible predictors of TURP, should be multivariate logistic. This is the only way to correctly quantify the relative contribution of natremia to the occurrence of TURP syndrome.

The Authors should precisely describe the possible predictive variables they screen on the univariate variable selection phase. A P<0.25 is the commonly recommended cut-off to maintain variables in the subsequent analysis.

The selected variables should eventually enter a multivariate logistic model, which should be precisely reported, providing single variable Odds Ratios with 95% CI, whole-model P, AUROC, and goodness-of-fit P. In the final model multicollinearity and linearity in the logit of continuous variables should be checked.

A major point is the identification of the dependent variable of such a model. Actually, I think that the “occurrence of any symptom of TURP” is an interesting dependent variable, but the paper would be much more informative if different predictive models were also provided, one for each TURP symptom.

Among the various examples of this kind of analysis, I suggest one from a
completely different setting, namely Agostoni M et al. Adverse events during monitored anesthesia care for GI endoscopy: an 8-year experience. Gastrointest Endosc 2011;74:266-75, in which different logistic regression models are build taking different complications as dependent variables in a retrospective analysis.

2.

The Authors consider three potentially predictive variables regarding serum sodium, namely absolute sodium values, absolute sodium changes, and percentage sodium changes. Obviously only one of these variables at a time can enter the same predictive model. A very interesting issue would be which one of these “sodium variables” yields the best predictive model for any given dependent variable.

Following the suggestions in Major Revision #1 reported above, the Authors should provide formal comparison of the AUROC generated by models incorporating different “sodium variables” and addressing the same dependent variable.

Minor revisions

1.

The Authors use both “TUR” and “TURP” throughout the text. Only one abbreviation should be used and I would suggest “TURP”, which is a standard.

2.

On P7L107 the concentration of the administered Bupivacaine is missing.

3.

On P7L110 it is not clear what does “T level” mean. The Authors should provide a precise dermatome level.

4.

The methodology of assessing “cardiovascular and neurological manifestation of TURP” (see P8L122) should be described in details. This is particularly important given the retrospective nature of the study.

How were these complications assessed?

The Authors refer to blood pressure “ preoperative levels” (P8L124) as a criterion to diagnose hypertension: how and when was it assessed?

How was the differentiation between TURP syndrome and other syndromes (P8L130-1) accomplished?

5.

The present description of the outcome variable is unclear (P9L147ss): which “neurological score” do the Author refer to? Was it a n/y outcome or an ordinal score?

Anyway this item would be corrected if Major Revision 1 was accomplished.
6. It would be interesting to know how many cases exhibited symptoms still having normal serum sodium.

7. The manuscript would benefit good English language revision.

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

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

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

**Declaration of competing interests:**

'I declare that I have no competing interests'