Reviewer's report

Title: Atherosclerotic ischemic renal disease. Diagnosis and prevalence in an elderly population.

Authors:

Prof Giorgio Coen (coen.gf@flashnet.it)
Santo Calabria (santocal@tiscalinet.it)
Silvia Lai (silvia.lai@uniroma1.it)
Eleonora Moscaritolo (moscaritolo@uniroma1.it)
Italo Nofroni (italo.nofroni@uniroma1.it)
Giuseppe Ronga (giuseppe.ronga@uniroma1.it)
Michele Rossi (michele.rossi@uniroma1.it)
Guido Ventroni (rosario.cianci@uniroma1.it)
Prof Daniela Sardella (coen.gf@flashnet.it)
Prof Michele Ferrannini (coen.gf@flashnet.it)
Alvaro Zaccaria (alvaro.zaccaria@uniroma1.it)
Rosario Cianci (rosario.cianci@uniroma1.it)

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Referee report on:
Atherosclerotic ischemic renal disease. Diagnosis and prevalence in an elderly population
by Coen et. al.
(6295049277587195_article.pdf)

General remarks
This is a descriptive study based on a series of 269 consecutive patients referred to a nephrologic clinic. It describes the clinical characteristics of the patient population and evaluates two methods for detection of renal artery stenosis. The title is slightly misleading as there is no reference to the catchment population for the patient series and therefore neither any assessment of the prevalence. As a statistician I cannot assess the clinical relevance of the paper, only the quantitative methods applied. Apart from the flaw with the sensitivity mentioned below, the methods applied are reasonably adequate for a study of this kind, but some more rigour in the application of simple methods is needed. I have tried to give some fairly detailed guidance to the authors on these matters.

Specific remarks

Sensitivity and specificity
The computations of sensitivity and specificity of Duplex-Doppler Sonography (DDS) and Renal Scintigraphy (RS) are wrong. Sensitivity and specificity cannot be evaluated on the basis of the data. This would require that a group of persons known to be positive by the gold standard be tested by DDS or RS. But the patients tested are selected on the basis of their DDS/RS results. As a group of patients positive for DDS are subjected to test by the gold standard the positive predictive value
(PV+) of DDS can be computed, and it is done correctly so. Similarly with the negative predictive values. The same remarks holds for RS. The numbers are rounded wrongly, and confidence intervals should be provided, preferably exact intervals. Using the (free!) statistical package R (http://www.r-project.org/) the following figures are found:

Estimate 95% exact c.i.
DDS: PV+ 33/35 = 94.3% (80.8-99.3)%  
PV- 20/23 = 87.0% (66.4-97.2)%

RS: PV+ 13/18 = 72.2% (46.5-90.3)%
PV- 5/17 = 29.4% (10.3-56.0)%

Tables

Tables I and II could easily be combined into one table. Likewise with table IV and V. Table III is unnecessarily complicated and uninformative. It might be replaced by a completed (and corrected!) version of the following, derived from table III (which as it stands now contains at least one error, since 24 are positive by RS but 34 by both methods!):

<table>
<thead>
<tr>
<th>DDS</th>
<th>RS Pos.</th>
<th>Neg.</th>
<th>Not tested</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pos.</td>
<td>34</td>
<td>24</td>
<td></td>
<td>49</td>
</tr>
<tr>
<td>Neg.</td>
<td>150</td>
<td>200</td>
<td></td>
<td>313</td>
</tr>
<tr>
<td>Not tested</td>
<td>45</td>
<td></td>
<td></td>
<td>82</td>
</tr>
<tr>
<td>All</td>
<td>49</td>
<td>189</td>
<td>31</td>
<td>269</td>
</tr>
</tbody>
</table>

Table IV and V could also be combined. Instead of the relatively uninformative p-value the estimated difference between the two groups with a 95% c.i. should be given. I suspect that the Creatinine clearance, Urinary proteine and possibly also Creatinine are highly skewed in their distribution, which would make a geometric mean and c.v. (i.e. the sd. of the natural log of the variable) more appropriate. These variables would also need log-transformation when computing the difference between the groups; this would then be measured as the ratio of the geometric means with appropriate c.i. I would guess that the non-significant difference between Urinary protein values in the two groups may be due to the lack of transformation. The confidence interval for the ratio of geometric means probably does not include 1 when calculated along these lines.

Rounding of numbers
There is a remarkable lack of consistency in rounding. Please do not remove trailing 0s: 8 means a number between 7.5 and 8.4999, but 8.0 means a number between 7.95 and 8.04999. The latter is probably what is meant for the sd. of the age of the patients with stenosis. Please go carefully through all tables to get consistency. The percentages in table V should all be given with one decimal. And so should the differences and its c.i. when combined with table IV.

Competing interests:
None declared.