Reviewer's report

Title: Sentinel lymph node biopsy is unsuitable for routine practice in young female patients with unilateral low-risk papillary thyroid carcinoma

Version: 1 Date: 18 November 2010

Reviewer: Pieter Raijmakers

Reviewer's report:

General
This is an interesting study with a relatively high number of patients and a randomization process, comparing blue dye SN detection with a combined Tc-colloid/blue dye SN detection technique.

Specifically, Sentinel node (SN) biopsy in patients with low risk papillary thyroid cancer was studied.

Higher SN identification rates were found for the combined 99mTc-colloid/blue dye, which is in line with earlier results in literature.

Authors calculated relatively high false negative rates. Authors state the SN technique is unsuitable for the routine clinical practice for this patient group.

However, I have some concerns regarding the primary research question, inclusion of patients, and methodology of SN detection and interpretation of the results.

Major Compulsory Revisions:

1 The inclusion/randomization of patients needs some clarification:
   -is this a population of consecutive female patients?
   -The randomization process should be described, how many patients were excluded before randomization, for example by refusing the protocol. How the randomization took place?

2 Authors state they included patients with unilateral papillary thyroid carcinoma. However, papillary thyroid carcinoma can be multifocal.
   -Patients with a multifocal localization excluded from this study? If patients with a multifocality were excluded when and how this exclusion was performed?
   Multifocal papillary carcinoma might cause false negative results of the SN.

3 Clarification of the lymphoscintigraphy is needed:
   -The SLN biopsy procedure includes a lymphoscintigraphy procedure, this applies only for the patients randomized to the combined tracer group.
   -What was the dose of the applied 99mTc-colloid tracer (in MBq)?
   -How was the colloid injected (echo-guided?), since it is a patient group with
small tumors. In literature both echo-guided and not echoguided procedures are described.

- The imaging procedure of the SN needs clarification:
typically, dynamic planar images are made after injection of SN, a dynamic SPECT procedure, as described in this manuscript, is somewhat atypical. (SPECT images take at least 20-30 minutes to make.)

Specific question: more than 1 SPECT scan was made? How many SPECT scans were made?

A SPECT scan can be useful for precise localization of a SN, especially in combination with CT. A more precise description of the imaging procedure is needed.

Which gamma-camera was used?

4 SN biopsy

- How many surgeons participated in this study?

- Authors state each surgeon had performed more than 20 SN biopsies. Were this SN biopsy procedures of patients with thyroid cancer, or SN biopsy procedures in general? A learning curve for each surgeon might be associated with higher false negative rates for the SN biopsy. This might explain the relative high false negative rates found in this study. Is there a difference in the FNR for the first 22 patients compared to the last 23 patients (total patients in each group =45)?

5 Data-analysis:
The authors should clarify the calculation of the FNR. Is the general accepted calculation of FNR of SN used?

(see also reference Nieweg et al. Ann Surg Oncol 2009 16:2089-2091)

For non-significant results exact p values should be added, confidence intervals of results are lacking.

This is a randomized study with two different SN detection methods, combining the results of these two groups is of limited value.

6 Authors should clarify the histological analysis of the SN (for example how many sections were made / analyzed)

Minor Essential Revisions:

7 The authors should clarify the specific research question (comparison of 99mTc-colloid or the combined blue dye/99mTc colloid)

In literature significantly lower SN detection rates are reported in studies using blue dye alone for SN detection in patients with thyroid carcinoma compared to studies using 99mTc-colloid for SN detection. Therefore, a randomization for 99mTc-colloid for SN detection versus a combined 99mTc-colloid/blue dye would have been a more interesting question. Authors might discuss this item in the discussion.
Text:
8 The title of the article does not include the study design (ie. it is a randomized study), see guidelines for authors BMC CANCER.

9 The significantly higher SN identification rate for the combined technique vs the single agent (blue dye) is not mentioned in the conclusion (abstract).

10 The discussion is too long and the first part is describing the SN biopsy in patients with breast cancer and melanoma. This is not highly relevant and can be deleted. The discussion should focus on the results of this specific study of thyroid carcinoma in low risk patients with two different SN detection methods.

Minor:
Methods section, SLN paragraph: axillary lymph nodes?

Discretionary Revisions:
An example of an image of a SN scintigraphy of a patient may be illustrative.

Level of interest: An article whose findings are important to those with closely related research interests

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'