Journal of Ultrasound (2017) 20:347–349
https://doi.org/10.1007/s40477-017-0269-y

LETTER TO THE EDITOR

Image-guided thermal ablation of benign thyroid nodules

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Received: 5 October 2017 / Accepted: 28 October 2017 / Published online: 14 November 2017

Abstract

Purpose To clarify some relevant and significant inconsistencies and inaccuracies in review by Mainini et al. entitled "Image-guided thermal ablation of benign thyroid nodules" published in Journal of Ultrasound to avoid giving incorrect information to the reader and prevent that operators make wrong choices in the use of various devices and technologies available.

Results Total cases treated with radiofrequency would be 2388 and not 2435 as reported in Table 1 of this review. The major, minor complications, and side effects in the partial group treated with laser technique and reported in this review are actually 1.2, 3.8, and 35.4%, respectively. In series of patients treated with laser ablation, including a total of 2345 patients, major and minor complications are 0.7 and 1.4%, respectively. The major complications of laser technology are less severe than RFA.

Conclusions Several points regarding the paper by Mainini et al. need to be discussed, and I advocate authors for replying to my considerations to clarify the issues raised.

Sommario

Obiettivo chiarire rilevanti e significative incongruenze e inesattezze nella review di Mainini et al intitolata "Ablazione termica guidata dall'imaging dei noduli benigni tiroidei" pubblicata sul Journal of Ultrasound allo scopo di evitare di fornire informazioni non corrette a chi legge e prevenire che gli operatori facciano scelte errate nell'uso dei vari dispositivi e tecnologie disponibili.

Risultati il numero totale dei casi trattati con radiofrequenza dovrebbero essere 2.388 e non 2.435 come riportato nella tabella 1 di questa revisione. Le maggiori e le minori complicanze e gli effetti collaterali nel gruppo parziale trattato con la tecnica laser riportato in questa revisione sono in realtà rispettivamente 1,2%, 3,8% e 35,4%. Nelle serie maggiori di pazienti trattati con la ablazione laser che comprendono un totale di 2345 pazienti, le maggiori e minori complicazioni sono rispettivamente 0,7% e 1,4%. Le complicazioni maggiori della tecnologia laser sono meno severe rispetto alla ablazione con radiofrequenza.

Conclusioni alcuni punti che riguardano lo scritto della Mainini, e al. necessitano di essere discussi, e chiedo agli autori di rispondere alle mie considerazioni in maniera da chiarire i problemi emersi.

Keywords Minimally invasive therapies · Laser ablation · Radiofrequency ablation · Thyroid nodules

Dear Sir,

In accordance with the present trend in the management of thyroid disease that suggests a less aggressive and tailored therapeutic approach also for low-risk thyroid malignancy [1] it seems appropriate to decrease the current use of surgery for definitely benign thyroid lesions. Due to the rather constant rate of growth of enlarging thyroid nodules, an effort should be addressed to change their natural history when they become symptomatic. In light of these considerations, the minimally invasive hyperthermic techniques are increasingly used in daily clinical practice in percutaneous debulking of benign thyroid nodules [2–4]. These techniques offer several advantages when compared to surgery. These treatment options are low-cost outpatient procedures, do not result in cervical scar nor loss of thyroid function, and are nearly completely devoid of risk of permanent complications [5]. These interesting outcomes obtained in the last decade by various US-guided minimally invasive therapies

Electronic supplementary material The online version of this article (https://doi.org/10.1007/s40477-017-0269-y) contains supplementary material, which is available to authorized users.

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(MITs) [6] explains the growing flowering of sophisticated studies to verify reliably the benign nature of the nodules before treatment and to monitor the effectivenss of the technique used in inducing volume reduction of the nodules and the amelioration of clinical problems of the patients after the procedure [7]. Among these, quantitative-elastosonography (Q-elastography) and contrast-enhanced ultrasound (CEUS) can offer useful informations both for planning and for subsequently assessing the results. In particular, they can provide pre- and peri-operative additional informations for characterization of nodule to be treated. CEUS is pivotal in assessing the actual extent of the coagulation zone induced immediately after the procedure and during follow-up [8, 9].

Therefore, I read with interest the paper by Mainini et al. entitled "Image-guided thermal ablation of benign thyroid nodules" published in the Journal of Ultrasound [10].

We congratulate the authors for their interesting review. However, in our opinion, this paper presents some limitations, as data provided are not based on a systematic review of the available literature. Particularly, data regarding results and complications of laser ablation need some comment and clarification, as they might appear not well balanced in comparison of the latter with the RFA.

As recently reported by Wang et al. in their recent comprehensive systematic review on radiofrequency ablation, there are some major limitations in the present literature regarding the analysis of results and complications of ablations for benign thyroid nodules [11] In particular, the criteria used to define complications and the time sequences are different as the patients came from different centers with their own criteria. Post-RFA thyroid complications are rarely recorded systematically. Even in large thyroid RFA series, complications were either not reported or were mentioned to be limited. The absence of randomized controlled trials and the availability of only two retrospective studies designed to record thyroid RFA complications [12, 13] as the primary aim prevented a meta-analysis from being performed. Moreover, a majority of the articles had an observational design, which precluded the ability to comment on the precise risks and cause of complications. Such results could reflect the inconsistent definitions of complications.

We fully agree with what says Wang and endorse its conclusions. Basically, one of the major problems is the absence of a unanimous consensus on the criteria for classification of major complications, minor complications and side effects, and even if major societies have reported guidelines for complications' classification, they are rarely applied. More generally, we believe it is necessary to plan a conference to find consensus also about the enrollement criteria of patients who may actually benefit from these percutaneous ablative treatments [14].

What said above is confirmed by what is reported in the paper by Mainini et al.: "Reported major complications of thyroid RF ablation include voice change, nodule rupture, hypothyroidism, and brachial plexus injury; minor complications include hematoma, vomiting, skin burn, pain, edema, fever, or coughing. In most articles, pain is considered as a minor complications only when is persists for more than 2 or 3 days after ablation; otherwise, it is considered as side effect. Pain during the procedure was considered as a complication, not simply as a side effect in only one article [15] ". Finally, tolerable pain immediately after RF ablation was not regarded as a complication or side effect in other article [12].

In other words, each center uses its own evaluation criteria. With the laser ablation technique four authors used the criteria recommended by of Society of International Radiology [16–19], unlike what done by researchers who used the RFA in only one retrospective study [13].

In light of the above said there is need to clarify some relevant and significant inconsistencies and inaccuracies to avoid giving incorrect information to the reader and prevent that operators make wrong choices in the use of various devices and technologies available:

1. It is unclear how the authors calculated the data in Table 1 and 2 in their paper. As the cases treated by Jeong in 2008 are 236 and not 302 as erroneously written in Tables 2, total cases treated with radiofrequency would be 2388 and not 2435 as reported in their Table 1.
2. In Table 1 of their review, the 584 cases treated with laser technique represent only a partial sample (only 17 articles) of the entire population treated with laser ablation. Our table included in this letter (see file Table 1 attached) clarifies that the major, minor complications and side effects are in this partial group 1.2, 3.8, and 35.4%, respectively. A more accurate and actual analysis (see our file Table 2 attached) changes significantly the clinical outcomes of patients treated with laser ablation. As shown in this table, including the larger number of cases, major and minor complications of laser ablation are, respectively, 0.7 and 1.4%. These values are in obvious conflict with what is written by Mainini et al. in their Table 1, where they reported 3% of major complications and 38.3% of minor complications. A more comprehensive evaluation of major complications, minor complications and side effects in the light of recent literature is shown in Tables 3a and 3b included in this letter (see files attached).
3. Our Table 4 (see file attached in this letter) shows a comparison, on the date of acceptance of this review—22 August 2016—between the complications of the major series of MW, and the two multicentric studies published at the date above mentioned, one performed with radiofrequency technique and the other with laser energy. There are obvious differences between the complica-

tions of RFA than the laser technique (less severe in the latter). Finally, noteworthy are the two cases of needle track seeding described recently with radiofrequency methodology [20, 21].

4. Finally, in paragraph about laser technology, in page 15 were reported two refs (rfs 34 and 32) that are not attributable to this technique.

In conclusion, several points regarding the paper by Mainini et al. need to be discussed, and I advocate authors replying to my considerations to clarify the issues raised.

Sincerely

Claudio M Pacella.

Compliance with ethical standards

Conflict of interest The author is consultant to ELESTA srl Calenzano (Fi), Italy.

Ethical Approval This article does not contain any studies with human participants performed by any of the authors.

Informed consent For this type of study formal consent is not required.

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