Preparation with recombinant humanized thyroid-stimulating hormone before radioiodine ablation after thyroidectomy: a systematic review

Yoo J, Cosby R, Driedger A

CRD summary

The conclusion that recombinant humanized thyroid-stimulating hormone for radioablation preparation following total or near-total thyroidectomy in patients with papillary or follicular thyroid cancer was equivalent to thyroid hormone withdrawal should be viewed with caution; lack of significant difference is not the same as equivalence in efficacy. Bias was possible and results were based on poorer quality study designs.

Authors' objectives

To evaluate the therapeutic use of recombinant humanised thyroid-stimulating hormone (rhTSH) for radioiodine ablation preparation.

Searching

MEDLINE (January 2006 to January 2008) and EMBASE (1996 to February 2008) were searched for published English-language studies. Search terms were reported. Reference lists were examined for further studies.

Study selection

Randomised controlled trials (RCTs), cohort studies and retrospective studies that compared radioiodine ablation preparation using rhTSH against standard withholding of thyroid hormone therapy in patients with no known metastatic disease were eligible for inclusion. Outcomes of interest were serum TSH levels, post-therapy scan results, iodine biokinetics in remnants, serum thyroglobulin (Tg), urinary iodine secretion and quality of life.

The included studies investigated the use of 0.9mg of rhTSH administered intramuscularly on two consecutive days, then radioiodine ablation either 24 or 48 hours after the second dose of rhTSH. All of the included patients had undergone total or near-total thyroidectomy for papillary or follicular thyroid cancer. Patients received rhTSH continued on thyroxine replacement throughout their treatment. Most patients were women. Ages ranged from 17 to 75 years.

Study selection was performed by one reviewer.

Assessment of study quality

Study quality did not appear to be systematically assessed, although some aspects of study quality were discussed.

Data extraction

The authors did not state how many reviewers performed data extraction.

Methods of synthesis

The studies were synthesised narratively by outcome. Tables of individual study details were available.

Results of the review

Four studies were included in the review (n=405, range 63 to 162): one RCT (n=63), two cohort studies (n=255) and one retrospective study (n=87).

There was no difference between groups in successful ablation rates (four studies). Administration of rhTSH led to substantial increases in serum TSH in four studies. Baseline 24 hour ^{131}I uptake following administration of a tracer dose of ^{131}I was not significantly different between groups in two studies. One study reported that patients in the rhTSH group received higher doses of radiation to the remnants and a 35% reduction in whole-body radiation dose. Four studies found that quality of life was worse in the hypothyroid group when compared with either baseline values or the rhTSH group.

One study reported mild transient nausea and fatigue with both methods of radioiodine ablation preparation, loss of taste in some patients in the rhTSH group and skeletal pain in some patients in the hypothyroid group. Another study reported no significant side effects with rhTSH.

Cost information
The three studies that investigated cost-effectiveness found that rhTSH-prepared patients lost less time from work and needed fewer encounters with healthcare providers.

Authors' conclusions
The efficacy of rhTSH for radioiodine ablation preparation following total or near-total thyroidectomy in patients with papillary or follicular thyroid cancer was equivalent to the traditional method of thyroid hormone withdrawal.

CRD commentary
The research question was supported by clear inclusion criteria. Two databases were search for studies published in English; publication and language bias could not be ruled out. Only one reviewer selected studies, so error and bias were possible. The processes for data extraction were not described. Study quality was not systematically assessed and most of the study designs included were less reliable. The authors suggested that efficacy was equivalent in the two groups as no significant differences were found between groups; this may not have been the case.

Possibility of bias in the review process, poorer quality study designs and the suggestion that lack of significant difference between groups was the same as equivalence in efficacy mean the authors' conclusions should be viewed with caution.

Implications of the review for practice and research
The authors did not state any implications for practice and research.

Funding
One author received support and honoraria from Genzyme.

Bibliographic details
Yoo J, Cosby R, Driedger A. Preparation with recombinant humanized thyroid-stimulating hormone before radioiodine ablation after thyroidectomy: a systematic review. Current Oncology 2009; 16(5): 23-31

PubMedID
19862359

Original Paper URL
http://www.current-oncology.com/index.php/oncology/article/view/306

Other URL
http://ukpmc.ac.uk/abstract/MED/19862359

Indexing Status
Subject indexing assigned by CRD

MeSH
Humans; Iodine Radioisotopes /therapeutic use; Thyroid Hormones /therapeutic use; Thyroid Neoplasms /therapy; Thyroidectomy

AccessionNumber
12010000046

Date bibliographic record published

24/03/2010

Date abstract record published
13/04/2011

Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.