

Correlation between basal and stimulated thyroglobulin in differentiated thyroid cancer at intermediate risk of recurrence

Introduction

Thyroglobulin (Tg) is a sensitive marker of differentiated thyroid cancer (DTC). To increase sensitivity, guidelines recommend Tg measurement after stimulation with recombinant TSH (rh-TSH) 6-12 months after radio remnant ablation (RRA).

Literature suggest that it is possible to avoid the measurement of Tg after stimulation with rh-TSH (Tg-S) in presence of undetectable values of basal Tg (Tg-B) if high functional sensitivity (0.1 ng/ml) method is used

However, most patients enrolled in the available studies are affected by low-risk DTC, while there are less evidence in Literature relating to intermediate and high risk patients.

Objectives

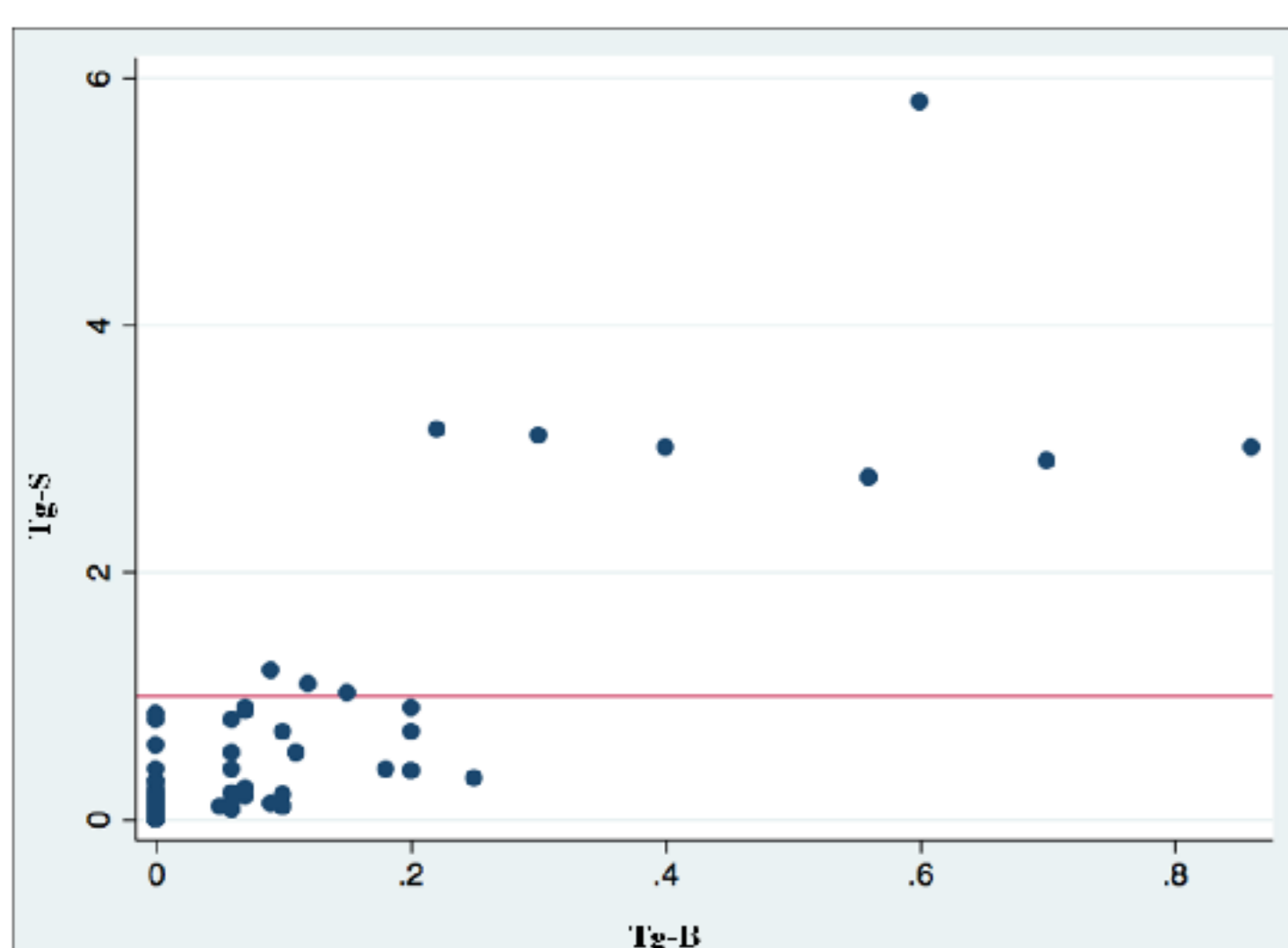
- ✓ To evaluate sensitivity of undetectable Tg-B values in predicting a negative Tg-S response
- ✓ To calculate a cut-off that makes possible to predict a negative Tg-S response with high specificity and sensitivity.

Methods

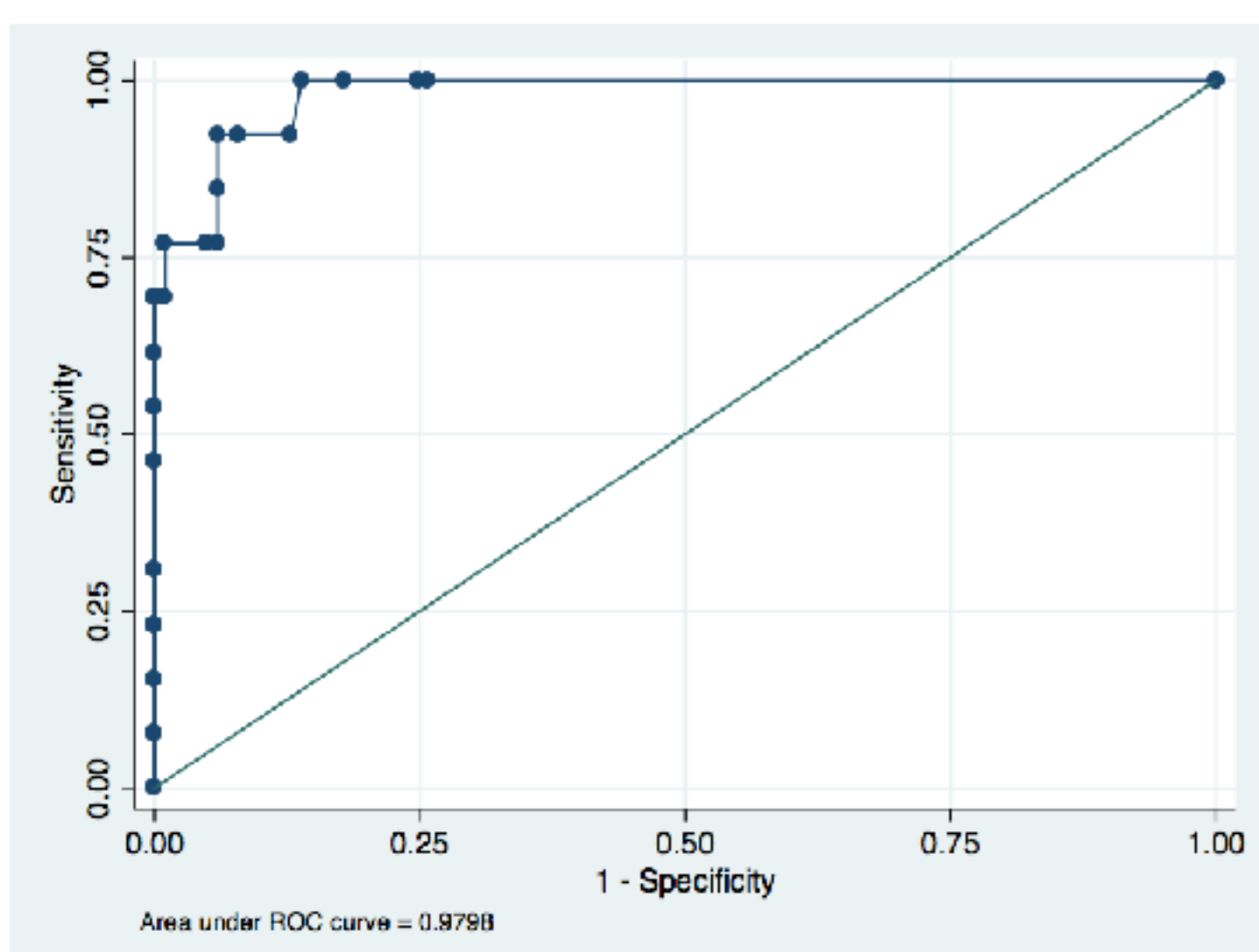
- ✓ Retrospective analysis on 113 patients affected by "intermediate risk" DTC, treated with thyroidectomy with or without lymphadenectomy and subsequent RRA 6-12 months after surgery (dose 30-150 mCi), with a Tg-B of <1 ng/ml and negative antibodies anti-Tg at 6-12 months after the RRA
- ✓ Patients were tested for serum Tg after rhTSH (0.9 mg, i.m.; Thyrogen, Genzyme Corp., Cambridge, Mass., USA for 2 consecutive days) on the basis of Thyrogen testing diagnostic schedule
- ✓ Tg after rh-TSH has been considered suggestive for absence of biochemical disease for Tg-S values less than 1 ng/ml

Tg has been measured using CLIA ultrasensitive method on DXI 800 with Beckman Coulter kit functional sensitivity of 0.05 ng/ml.

Results



Undetectable Tg-B (<0.05 ng/ml) showed a sensitivity of 100% in predicting a Tg-S < 1 ng/ml.



ROC curve showed that Tg-B < 0.09 ng/ml represents the cut off with best sensitivity (100%) and specificity (86%) to predict a Tg-S < 1 ng/ml (area under ROC curve: 0.97)

✓ Statistical analysis showed that cut-off appear independent from the variables analyzed (pT, N, M, aggressive variants) and consequently from the ATA risk class.

✓ Therefore, multivariate analysis showed that Tg-B cut off and their sensitivity are independent from Tg values detected at the moment of RRA during thyroid hormone withdrawal (THW).

Conclusions

Pending further studies targeted for analyzing intermediate risk patients, in our study undetectable Tg-B values measured 6-12 months after RRA have made possible to predict the negativity of Tg-S with high sensitivity, regardless of the initial ATA risk class and of Tg values during THW for RRA.