Disease-free survival factors in patients with medullary thyroid carcinoma

A. Zahmoul, S. Jbali, M. Dhaha, R. Braham, A. Methnani, S. Dhambri, S. Kedous.

Abstract

Medullary thyroid carcinoma is a rare neuroendocrine malignancy. It accounts for less than 5% of all thyroid cancers. It can be sporadic or hereditary. Prognosis is less favorable than well differenciated thyroid carcinomas with a reccurence rate as high as 50%. The factors involved in recurrence and survival are partially unknown and debated. We aim through this work to highlight these prognostic factors.

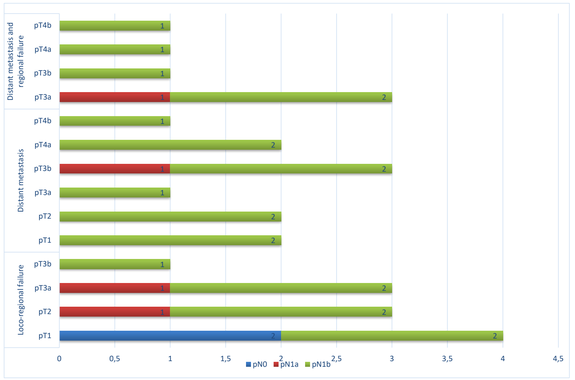

Figure 1: Therapeutic failures distribution according to TNM stage

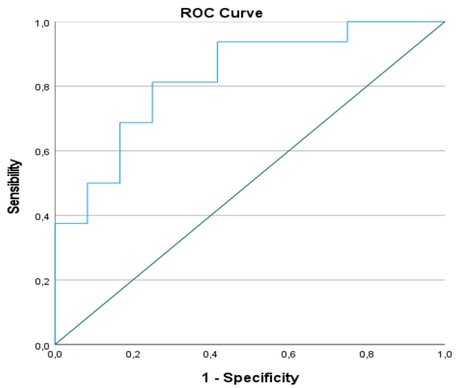

Figure 2: The ROC Curve for predicting a preoperative calcitonin threshold associated with disease relapses or progression

Aim

We aim to present, through 50 cases operated for medullary thyroid carcinoma, different factors associated with disease-free survival.

Materials and methods

- A retrospective study including 50 patients treated for medullary thyroid carcinoma between 1998 and 2020. Factors affecting disease free survival after the initial therapy and during the follow-up period were investigated.
- At last follow-up, Patients were categorized as having persistent/recurrent disease and no evidence of disease (NOD).

Results

- 54% were males.
- The mean age was 47.8 years old and the mean follow-up time was 60 months.
- Twenty-eight treatment failures (56% of treated patients) were recorded during the follow-up period.
- The median occurrence time of these therapeutic failures was 24 months.
- Therapeutic failures were defined by the appearance of one of these events:
  - Loco-regional failure (observed in 11 patients),
  - Distant metastasis (11 patients), or both (6 patients).
  - The mean disease-free survival was 118 months.
- Treatment failure affected patients with:
  - Locally advanced tumors: stages T3-T4 in 60% of cases and with
  - Stage N1b in 78% of cases. (Figure1)
- In bivariate analysis, four factors showed a significant impact on disease-free survival (DFS):
  - Male gender.
  - Lymph node involvement in the lateral sectors.
  - Preoperative calcitonin level greater than 505 pg.
  - Incomplete surgery (tumor and/or lymph node).
- Pre-treatment calcitonin level >= 505 pg/l is the strongest predictor of a worse DFS (p=0.01): sensitivity and specificity of 0.81 and 0.75 respectively (AUC=0.83; p=0.003) (Figure 2).
- Other factors with strong influence: margin status (p=0.12) and lymph node capsule rupture (p=0.14).

Discussion and Conclusion

Four factors have proven a powerful impact on disease free survival in our study. Many other factors reported in the literature influence DFS. According to Marta Amaro da Silveira Duval et al post operative calcitonin level is a strong prognostic marker for long-term disease-free survival. (1) Some RET oncogene mutations are associated with associated with more advanced disease such as M918T and C634. (2) Knowing these factors is essential to offer an optimal management to MTC patients

References

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