Relationship between first radioactive iodine administration time and initial response to treatment in patients with papillary thyroid carcinoma

Original Article

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ABSTRACT

Introduction: The initial post-surgical radioactive iodine (RAI) therapy for patients with papillary thyroid cancer (PTC) is postponed due to increased demand as well as the limited number of centers to provide RAI therapy. Hence, our aim was to investigate the role of first RAI administration time following thyroidectomy on the number of incomplete response (IR) during the initial follow up, while considering other prognostic factors.

Methods: Two hundred and thirty-five PTC patients who were admitted to our department for RAI therapy were included in this study. They were allocated into two groups with <3 months (early group) and ≥ 3 months (delayed group) time interval after the first RAI therapy, and the total thyroidectomy. Then, based on the response to RAI therapy, patients were categorized as excellent, biochemical incomplete, structural incomplete, or indeterminate responses (ER, BIR, SIR or IDR, respectively).

Results: With respect to age, gender, pathologic variables, RAI dose rate and IR (BIR+SIR) rate, significant differences were found between the two groups. The findings identified that early RAI failed to affect the rate of IR (univariate analysis: HR=1.09, 95%CI: 0.69-1.74, P=0.71; Cox model: HR=0.81, 95%CI: 0.46-1.44, P=0.47). However, Cox multivariate analysis found lymph node status and thyroglobulin level (Lymph node status: HR=2.88, 95%CI: 1.07-7.78, P=0 .04) as independent risk factors for IR during the initial follow up.

Conclusion: Therefore, timing of the first post-surgery RAI therapy is not a significant prognosticator of the initial response of patients to therapy.

Key words: Papillary thyroid cancer; Radioactive iodine; Administration time; Response to therapy

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high-risk PTC patients revealed that delayed RAI therapy (mean 138 mCi), even up to 180 days had no significant impact on restaging, recurrence or mortality of patients with DTC [21]. The mean RAI dose in our patients was 131 mCi, and we also found that delayed initial RAI therapy was not associated with higher rate of IR. Krajewska et al. also compared the initial RAI within 9, 9-24 and >24 months after the initial diagnosis [22]. They also suggested that delayed initial RAI therapy >9 months after surgery was associated with poorer long-term outcome, but not in the intermediate or high-risk patients. In this study, low-risk patients were treated with lower doses of RAI (median RAI dose of 60 mCi).

Our study also suggested that the only independent predictive factor for IR during the initial follow up was the positive lymph node metastasis. This was also indicated by several previous studies.

CONCLUSION

Although the retrospective nature and relatively small sample of our study might have affected our findings, as combined with previous studies, it can be stated that initial RAI timing after thyroidectomy cannot be significantly related to the initial response of patients to the therapy. However, further prospective trials with larger sample size is still warranted to confidently conclude about the impact of initial RAI timing on the outcome of PTC patients; we also suggest further studies to separately evaluate the role of initial RAI timing in patients treated with low or high-dose RAI.

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