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ORIGINAL ARTICLE

Impact of body mass index on survival outcome in patients with differentiated thyroid cancer[☆]

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KEYWORDS

Differentiated thyroid cancers;
Body mass index;
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Abstract

Introduction: Increased body mass index (BMI) is known to be associated with the high prevalence of Differentiated Thyroid Cancers (DTC); however data on its impact on survival outcome after thyroidectomy and adjuvant therapy is scanty.

Objective: We aimed to evaluate the impact of BMI on overall survival (OS) and disease free survival (DFS) rates in patients with DTC.

Methods: Between 2000 and 2011, 209 patients with DTC (papillary, follicular, hurthle cell) were treated with thyroidectomy followed by adjuvant radioactive iodine-131 (RAI) therapy and thyroid-stimulating hormone (TSH) suppression. Based on BMI, patients were divided into five groups; (a) <18.5 kg/m² (underweight); (b) 18.5–25 kg/m² (normal weight); (c) 26–30 kg/m² (overweight); (d) 31–40 kg/m² (obese) and (e) >40 kg/m² (morbid obese). Various demographic, clinical and treatment characteristics and related toxicity and outcomes (OS, and DFS) were analyzed and compared.

Results: Median follow up period was 5.2 years (0.6–10). Mean BMI was 31.3 kg/m² (17–72); BMI 31–40 kg/m² was predominant (89 patients, 42.6%) followed by 26–30 kg/m² seen in 58 patients (27.8%). A total of 18 locoregional recurrences (8.6%) and 12 distant metastasis (5.7%) were seen. The 10 year DFS and OS rates were 83.1% and 58.0% respectively. No significant impact of BMI on OS or DFS rates was found ($p=0.081$). Similarly, multivariate analysis showed that BMI was not an independent prognostic factor for OS and DFS.

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PALAVRAS-CHAVE

Câncer diferenciado de tireoide;
Índice de massa corporal;
Sobrevida global;
Sobrevida livre de doença

Conclusion: Although BMI can increase the risk of thyroid cancer, it has no impact on treatment outcome; however, further trials are warranted.

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Impacto do índice de massa corporal sobre o desfecho de sobrevida em pacientes com câncer diferenciado de tireoide

Resumo

Introdução: Sabe-se que o aumento do Índice de Massa Corporal (IMC) está associado à alta prevalência de Câncer Diferenciado de Tireoide (CDT); entretanto, os dados sobre seu impacto no desfecho de sobrevivência após tireoidectomia e terapia adjuvante são escassos.

Objetivo: Objetivou-se avaliar o impacto do IMC nas taxas de sobrevida global (SG) e sobrevida livre de doença (SLD) em pacientes com CDT.

Método: Entre 2000 e 2011, 209 pacientes com CDT (papilar/folicular/de células de Hürthle) foram tratados através de tireoidectomia, seguida de tratamento com iodo radioativo ¹³¹I (RAI) adjuvante e supressão de hormônio estimulante da tireoide (TSH). Com base no IMC, os pacientes foram divididos em cinco grupos; (a) <18,5 kg/m² (baixo peso); (b) 18,5–25 kg/m² (peso normal); (c) 26–30 kg/m² (sobrepeso); (d) 31–40 kg/m² (obesos) e (e) > 40 kg/m² (obesos mórbidos). Várias características demográficas, clínicas e de tratamento e toxicidade associada e desfechos (SG e SLD) foram analisadas e comparadas.

Resultados: O período médio de acompanhamento foi de 5,2 anos (0,6–10). O IMC médio foi de 31,3 kg/m² (17–72); o IMC de 31–40 kg/m² foi predominante (89 pacientes, 42,6%), seguido por 26–30 kg/m², observado em 58 pacientes (27,8%). Observaram-se 18 recidivas locorregionais (8,6%) e 12 metástases distantes (5,7%). As taxas de SLD e SG de 10 anos foram de 83,1% e 58,0%, respectivamente. Não foi encontrado impacto significativo do IMC nas taxas de SG ou SLD ($p=0,081$). Da mesma forma, a análise multivariada mostrou que o IMC não foi um fator prognóstico independente para SG e SLD.

Conclusão: Embora o IMC possa aumentar o risco de câncer de tireoide, ele não tem impacto no resultado do tratamento; contudo, outros estudos são necessários.

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Introduction

The prevalence of overweight body mass index (BMI) >30 kg/m² and obesity has increased worldwide during past decade and data has shown that 35% of the Americans are obese.^{1,2} In Kingdom of Saudi Arabia, BMI is increasing in both sexes and across all ages with an overall prevalence of 44%.^{3,4} Obesity is well known risk factor for various types of malignancies including endometrial carcinoma, colorectal carcinoma and breast carcinoma.^{5,6} Recent data has reported the correlation of increased BMI with differentiated thyroid cancer (DTC).⁷ A recent review has shown that morbid obese patients (BMI > 35 kg/m²) were found to have significantly larger tumors than patients with BMI < 35 kg/m².⁸ Similarly, another study from South Korea not only reported highest incidence of DTC in obese women but also correlation of DTC with higher mean waist circumference, fat ratio, and blood pressure.⁹

Although the causal relationship exists between BMI and DTC, its impact on treatment outcomes including disease free survival (DFS) and overall survival (OS) rates after thyroidectomy and Adjuvant radioactive iodine-131 (RAI) therapy and TSH suppression is not well known.

The purpose of present study was to evaluate the impact of BMI on locoregional control (LRC), distant metastasis control (DMC), DFS and OS, and toxicity profile in Saudi patients with DTC treated with thyroidectomy and adjuvant RAI therapy.

Methods

After formal approval from the institutional ethical committee, medical records of 209 DTC patients, who were treated at our hospital during the period of July 2000 and December 2011, were reviewed using computer based database system.

Demographic, clinicopathological and radiological data

Demographic and clinical data including age at the time of diagnosis, gender and symptomatology were reviewed. Different histopathological characteristics, including tumor size, histopathologic variants, multifocality, tumor, lymph node and metastasis (TNM) staging were recorded. Data

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