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REVIEW ARTICLE

The influence of antineoplastic treatment on the weight of survivors of childhood cancer☆

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KEYWORDS
Neoplasms;
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Abstract

Purpose: Obesity is a late effect in survivors of childhood cancer and correlates with chronic complications. Survivors of leukemia, brain tumors, and hematopoietic stem cell transplantation are more likely to develop obesity resulting from treatment modalities such as radiotherapy and glucocorticoids. This paper analyzes and integrates the current data available to health professionals in order to clarify strategies that can be used to treat and prevent obesity in childhood cancer survivors.

Sources: This is a literature review from on scientifically reliable electronic databases. We selected articles published in the last five years and earlier articles of great scientific importance.

Data synthesis: The mechanisms involved in the pathophysiology of obesity in cancer survivors are not completely understood, but it is believed that damage to the hypothalamus and endocrine disorders such as insulin resistance, leptin resistance, and hormone deficiency may be involved. The body composition of this group includes a predominance of adipose tissue, especially in those undergoing hematopoietic stem cell transplant and total body irradiation. The use of body mass index in these patients may lead to an underestimation of individuals' risk for metabolic complications.

Conclusion: Early identification of groups using accurate anthropometric assessments, interventional treatment, and/or preventative measures and counseling is essential to minimize the adverse effects of treatment. Physical activity and healthy eating to promote weight loss in the whole population should be encouraged.

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PALAVRAS-CHAVE
Neoplasias;
Criança;
Sobreviventes;
Obesidade;
Radioterapia;
Transplante de Medula Óssea

A influência do tratamento antineoplásico sobre o peso de sobreviventes do câncer na infância

Resumo

Objetivo: A obesidade é um efeito tardio em sobreviventes do câncer na infância e está correlacionada a complicações crônicas. Os sobreviventes da leucemia, tumores cerebrais e transplante de células-tronco hematopoiéticas têm maior probabilidade de desenvolver obesidade como resultado das modalidades de tratamento, como radioterapia e glicocorticoides. Este artigo analisa e integra os dados atuais disponíveis a profissionais da saúde para esclarecer as estratégias que podem ser utilizadas para tratar e prevenir a obesidade em sobreviventes do câncer na infância.

Fontes: Esta é uma análise da literatura de bases de dados eletrônicas cientificamente confiáveis. Selecionamos artigos publicados nos últimos cinco anos e artigos mais antigos de grande importância científica.

Resumo dos dados: Os mecanismos envolvidos na fisiopatologia da obesidade em sobreviventes do câncer não são completamente entendidos, porém acredita-se que o dano no hipotálamo e disfunções endócrinas, como resistência à insulina, resistência à leptina e deficiência hormonal, possam estar envolvidos. A composição corporal desse grupo inclui uma predominância de tecido adiposo, principalmente em pacientes submetidos a transplante de células-tronco hematopoiéticas e irradiação de todo o corpo. O uso do índice de massa corporal nesses pacientes poderá levar a uma subestimação do risco de complicações metabólicas nessas pessoas.

Conclusão: A identificação precoce de grupos por meio de avaliações antropométricas precisas, tratamento intervencional e/ou medidas preventivas e aconselhamento é fundamental para minimizar os efeitos colaterais do tratamento. A atividade física e alimentação saudável devem ser incentivadas para promover a perda de peso na população em geral.

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Introduction

Obesity is an acknowledged late effect in childhood cancer survivors that is especially observed in certain groups, such as survivors of brain tumors or leukemia, since these cancers are associated with other chronic diseases including diabetes, hypertension, depression, cardiovascular disease, and dyslipidemia.[1,2] Obesity in these groups of individuals is well described in the literature; among all survivors, cranial radiotherapy (CRT), chemotherapy, and steroids have been documented to contribute to an alteration in the body composition of patients already discharged from oncologic treatment.[3]

Endocrine and metabolic alterations have been reported as highly prevalent in cancer survivors who have received a hematopoietic stem cell transplant (HSCT). Contributing factors may include an intense or prolonged immunosuppressive treatment, post-transplant endocrine dysfunction, and insulin or leptin resistance. Although there are no studies suggesting HSCT as causative, prevention and early treatment of cardiovascular risks in these patients might diminish the incidence of late complications after the transplant.[4]

The early identification of high-risk groups, followed by a treatment plan based on metabolic and nutritional assessments that includes increased physical activity, is an essential component in the prevention of obesity.[5] With this knowledge, it is important to study the causes of obesity in all survivors of childhood cancer, addressing not only causes well documented in the literature as influential, but also the seldom explored causal factors in this group. The authors also question the efficacy of body mass index (BMI) as an indicator to identify patients who are overweight, since these individuals experience changes in body composition, and therefore patients at risk for metabolic complications may be overlooked. Thus, the goal of this review is to promote discussion on the theme through data compilation and understanding possible causes, and to alert health professionals of the importance of this topic. Promotion of debate in the academic community is essential to encourage the implementation of future public health policies to prevent obesity in children and adolescents with cancer and in future survivors.

Methods

This is a literature review from on scientifically reliable electronic databases and conducted in the second half of 2014 and first half 2015 using the following descriptive terms related to the topic: ''Obesity''; ''Survivor''; ''Antineoplastic agents/adverse effects''; ''Neoplasms''; ''Childhood''. Articles published in the last five years and earlier articles of great scientific importance were selected, with exclusion of those that did not fit the proposed work, and were stratified according to study design, number of

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