

# Metabolic syndrome in childhood cancer survivors: Delta BMI a risk factor in lower middle-income countries

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## Abstract

Background: Metabolic syndrome (MetSyn) is an important late effect of childhood cancer. The combination of rising obesity and high prevalence of under-nutrition at diagnosis, make this a unique population to study in LMIC (lower middle-income countries). Method: Children <18 years of age at cancer diagnosis, in a single-centre in a LMIC, who were disease free and had completed treatment at least 2 years prior to study were included. MetSyn was defined using International Federation for Diabetes criteria for Asian Indians. Univariate and multivariable analyses were carried out to evaluate the influence of risk factors on MetSyn. Delta BMI (body mass index) was further studied using receiver operating characteristic curve. Results: A high prevalence of MetSyn (12.2%), central obesity (33%), and dyslipidemia (61.8%) was found in a cohort of 500 childhood cancer survivors (CCS) at a mean follow-up age of 17 years. Logistic regression analysis revealed male gender, OR 2.4(1.1-5.4), older age at diagnosis >10 years, OR 2.9(1.6-5), longer survival duration >10 years, OR 2.2(1.3-3.8), high BMI at diagnosis OR 3.2(1.5-6.9), high delta BMI >50, OR 3.15(1.7-5.9) and cranial RT among children <5 years with acute lymphoblastic leukemia, OR, 5.5(1.5-2), to be independent predictors of MetSyn. Delta BMI (>50) strongly predicted MetSyn among patients who were under-weight or normal at diagnosis (OR, 12.5,1.7-92). Conclusion: Our CCS are at high risk of MetSyn and its components at an early age. Monitoring delta BMI during follow-up can be useful for screening CCS at risk for this modifiable late effect of cancer treatment.

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