Obesity and metabolic changes are common in young childhood brain tumor survivors.

Pietilä S, Mäkipernaa A, Sievänen H, Koivisto AM, Wigren T, Lenko HL.

Department of Pediatrics, Tampere University Hospital, Tampere, Finland.

BACKGROUND: A population based cross-sectional study was used to examine the prevalence of metabolic syndrome and its components in childhood brain tumor survivors. PROCEDURE: Fifty-two survivors were examined at a mean age of 14.4 years (range 3.8-28.7). Lipid and glucose metabolism, thyroid function, and plasma uric acid were evaluated. Fat mass and fat percentage were assessed by dual-energy X-ray absorptiometry (DXA). Metabolic syndrome was defined on International Diabetes Federation criteria. RESULTS: Ten (19%) patients were overweight and four (8%) were obese. According to DXA, 16/46 (35%) patients were obese. Central obesity was found in 11 (21%) patients. Cranial irradiation, hypothalamic/hypophyseal damage, growth hormone (GH) deficiency and impaired mobility were associated with overweight/obesity and central obesity. Thirteen (25%) subjects had hypercholesterolemia, 14 (27%) had raised low-density lipoprotein cholesterol (LDL-C), 12 (23%) had raised blood pressure, four (8%) had metabolic syndrome, two (4%) had hyperinsulinemia and five (10%) had hyperuricemia. Cranial irradiation was associated with hypercholesterolemia (P = 0.019), raised LDL-C (P = 0.028), raised blood pressure (P = 0.040), and metabolic syndrome (P = 0.018). Impaired mobility was associated with hypercholesterolemia (P = 0.034). Hypothalamic/hypophyseal damage was associated with metabolic syndrome (P = 0.003) and hyperuricemia (P = 0.011) as was GH deficiency (P = 0.034 and P = 0.008). GH supplementation alleviated adverse metabolic outcomes among brain tumor survivors with GH deficiency. CONCLUSIONS: Obesity/overweight, dyslipidemia, hypertension, metabolic syndrome, and hyperuricemia were common in young childhood brain tumor survivors. Cranial irradiation, hypothalamic/hypophyseal damage, growth hormone deficiency, and/or impaired mobility were associated with higher risk for obesity and metabolic changes among these patients.

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