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

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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. *Pediatr Blood Cancer* (c) 2009 Wiley-Liss, Inc.

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