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EVOLUTION OF PITUITARY DYSFUNCTION FOLLOWING CRANIAL RADIOTHERAPY FOR CHILDHOOD CANCER

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Aim: The combined pituitary function test is often used to establish endocrine abnormalities following treatment for childhood cancer. The evolution of pituitary dysfunction has been demonstrated in adults, but is not clear whether the same pattern is seen in children. We set out to evaluate the evolution of pituitary failure resulting from cranial irradiation. We have also evaluated the clinical utility of the standard pituitary function test, to investigate the optimal timing of this test to identify the onset of endocrine problems. Patients and methods: A retrospective audit of 72 survivors of childhood malignancies, 33 girls and 39 boys aged 0-14 years at diagnosis who had undergone pituitary function tests 1-15 years post irradiation. 51 received cranial irradiation. Results: Cumulative data showed that at 2 years post radiotherapy 45% and 32% were GH and cortisol deficient respectively. Baseline FSH/LH levels at 2 years post treatment were poorly predictive of eventual deficiency (25%), whereas TSH deficiency (4%) took up to 5 years to evolve and could be anticipated by very low (<1 mU/L) baseline levels. Conclusion: The pattern of pituitary dysfunction following cranial irradiation evolves differently in children compared with adults. GH deficiency is the norm and adrenal insufficiency sufficiently frequent to confirm the recommendations to investigate pituitary function by two years (maximum) from cessation of treatment. TSH deficiency can be anticipated by low basal levels, but the detection of gonadotrophin insufficiency still requires dynamic testing.