Outcomes of the low dose short Synacthen test in infancy

Background:

The hypothalamic-pituitary-adrenal (HPA) axis may be suppressed at birth. In most infants this is tolerated well. HPA testing in infancy often generates ‘abnormal’ results although abnormalities of the HPA may not be identified and cortisol measurements often ‘normalise’ over time. [1]

Aim:

To contribute to the evidence base on neonatal HPA activity by reporting outcomes of infants age < 1 year tested with the low dose short Synacthen test (LDSST: Synacthen 500ng/1.73m2, sampling at 0’, 15’, 25’, 35’) between 2013-2020 at a tertiary children’s hospital. Infants with low cortisol during critical illness, prolonged jaundice, recurrent hypoglycaemia and following high dose glucocorticoid use in intensive care were tested.

Methods:

Gestation at birth, age at testing and gender were recorded. Maximum cortisol concentrations were: ‘normal’, ≥450nmol/L; ‘suboptimal’ 350-449nmol/L treated with ‘sick day’ hydrocortisone, during periods of stress only; ‘abnormal’, <350nmol/L, treated with daily hydrocortisone.

Results:

Data from 31 (21M) infants, age 0.2 months (±0.3 months) at time of first LDSST were included. 15/31 (48.4%) received daily hydrocortisone, 9/31 (29.0%) received sick day only. Preterm infants were more likely to ‘fail’ (Table 1). A second LDSST performed 0.9 ±0.9 years later was abnormal in 6/24 (25%) infants, of whom two had normal results on subsequent tests. In 20/24 (83.3%) infants in whom the cortisol peak was <450nmol/L on the first LDSST, a normal test result was documented at the age of 1.3 ± 1.1 years. After two years, four infants are treated with daily hydrocortisone, none have a diagnosis for adrenal insufficiency.

Discussion:

Cortisol responses to LDSST are frequently impaired, particularly in preterm infants. Long-term hydrocortisone treatment may inhibit the normal maturation of this hormone pathway. Regular re-evaluation of the adrenal axis is essential.



Reference

1. Tan et al. (2018) Arch Dis Child