Short Synacthen Test for Children at Sultan Qaboos University Hospital; Reviewing the sampling times

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Introduction

Primary adrenal insufficiency in paediatrics is an uncommon but lethal condition, it results most commonly from congenital adrenal hyperplasia[1]. One of the common ways to evaluate the ability of the adrenal cortex to produce cortisol is a stimulation by synthetic adrenocorticotrophic hormone (ACTH) also known as Tetracosactrin, Tetracosactide, or Cosyntropin. The commonly used product is Synacthen, hence the name of the test; Short Synacthen Test (SST). The used Synacthen doses are age-based; 62.5mcg for babies younger than 6 months, 125mcg for infants between 6-24 months and 250mcg for children older than 2 years. There is a controversy amongst endocrinologists about the necessity of sampling at 30min[2,3]. 0 and 60min samples claimed to be sufficient for a diagnostic SST result.

Aim

To Report our experience and review the SST protocol in patients investigated for primary adrenal insufficiency with a focus on the concordance between 30 and 60min serum cortisol (SC) measurements during SST.

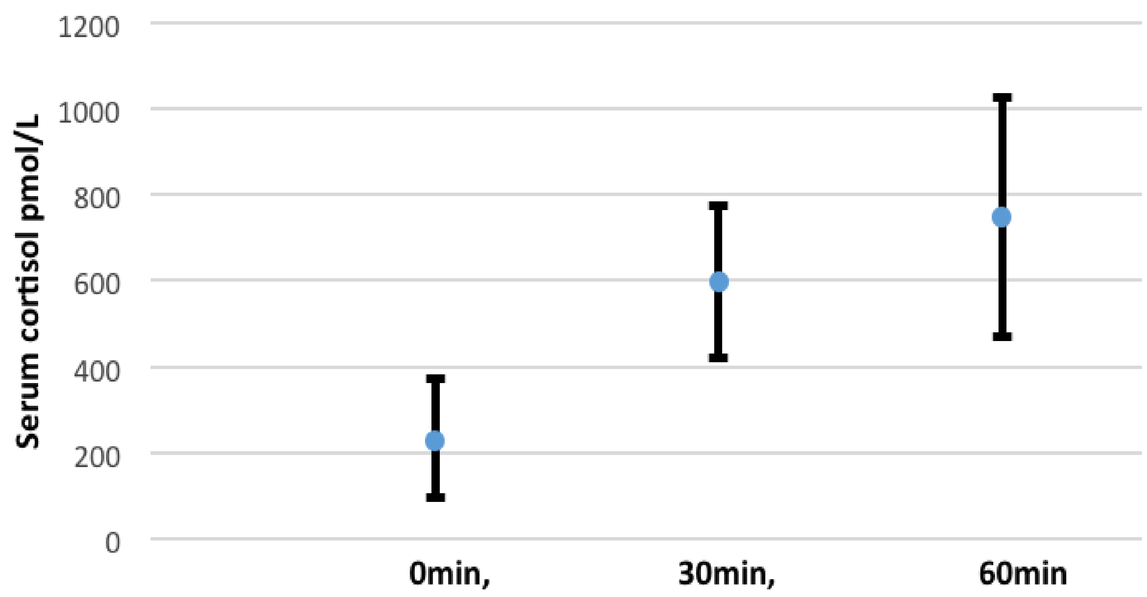
Method

All SST were performed in our Biochemistry Laboratory were reviewed for paediatric endocrine patients aged below 16 years old between 01/01/2014 to 31/12/2018, using the the electrochemiluminescence immunoassay (Roche – Cobas E 601 platform). Internal and external quality control materials are routinely used to ensure the precision and accuracy of SC levels at the laboratory. The cut off used for SC value is 550 nmol/L.

Results

- 53 SSTs (43 patients; F23)
- Mean age and standard deviation were 6±5 years,
- Age of patients ranged between 3days and 16years.
- Out of 53 performed SSTs, only 15 SSTs included the 30min sampling, whereas the rest were done by measuring SC at 0 and 60min only.
- The standard deviation error bars between 30 and 60min showed overlapping. However, the t-test at α=0.05 level of significance, showed sufficient evidence to conclude that there is a difference in the average SC level between 30 and 60min (p 0.0017).

Fig.1 Mean and standard deviation of serum cortisol at 0,30 and 60 min (SST).



Conclusion

This review showed higher cortisol levels at 60min compared to 30min therefore we would recommend dropping the 30min sample from SST performed in paediatric population, which will contribute to patient comfort, cost saving and reducing the workload. If the peak at 60min is in a grey area (500-550pmol/L) then it may worth repeating the SST by including a 30min sampling.

References;

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Adrenals and HPA Axis

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