The Measurement Of Urinary Gonadotrophins For Assessment And Management Of Pubertal Disorders

L. Lucaccioni1-2, J. McNeilly3, M. McMillan 1, A. Kyriakou1, M. G. Shaikh1,
S.C. Wong1, B. Predieri2, L. Iughetti2, A. Mason3, S. F. Ahmed1

1 - Developmental Endocrinology Research Group, Royal Hospital for Children, University of Glasgow, UK
2 - Paediatric Unit, Department of Medical and Surgical Sciences for Mother, Children and Adults, University of Modena & Reggio Emilia, Italy
3 - Department of Biochemistry, Royal Hospital for Children, Glasgow, UK

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Introduction

An increasing need for non-invasive, out-patient based investigations has necessitated a re-evaluation of urinary gonadotrophins (uGn) for assessing puberty. Prospective evaluation of the relationship between first morning urinary uGn measured by immunoassay and corrected for creatinine (uLH:uCr; uFSH:uCr), and basal serum gonadotropins (sLH, sFSH) and in response to LHRR stimulation test. Prospective evaluation of uGn trend in patients receiving GnRH analogue (GnRH-a)(Decapeptyl SR, 11.25 mg, every 10-12 weeks).

Methods

20 (15 M) patients evaluated for delayed puberty, 15 (1M) for suspected precocious puberty and 18 (3M) on GnRH-a. Three first morning urine samples on 3 mornings before the stimulation test or before the 10-12wkly GnRH-a injections were collected. For patients on treatment, 3 samples were also collected at the mid-point between injections. Data were expressed as median (range).

Results

A significant correlation was found between basal sLH and uLH:uCr (p, 0.7; p<0.0001) and basal sFSH and uFSH:uCr (p,0.72; p<0.0001). (Fig 1).

Based on ROC curve analysis a uLH:uCr value of 0.032 IU/mmol as a cut-off would detect a sLH peak >5 IU/L (sensitivity: 87%; specificity: 86%; AUC: 0.9) (Fig.3).

CoV of samples collected before treatment was 0.27 (0.1-4) for uLH:uCr and 0.24 (0.05-0.99) for uFSH:uCr.

On treatment, uLH:Ucr CoV of samples collected before the injection and at mid-point was 0.29 (0.14-0.85) and 0.33(0.04-0.63), respectively, while for uFSH:Ucr, CoV was 0.24 (0.13-0.52) and 0.4 (0.08-1.3).

Median uLH:Ucr and uFSH:Ucr before the injection (0.01 IU/mmol; 0.34 IU/mmol) were significantly higher than at mid-point (0.008 IU/mmol; 0.09 IU/mmol) (p: 0.000 and p: 0.000) (Fig. 4).

Conclusions

Ugn reflect serum gonadotrophin concentrations and may represent a useful non-invasive method of assessing puberty and monitoring effectiveness of puberty suppressive therapy.