

## ABSTRACT FOR ORAL PRESENTATION

### TITLE: **SERUM FIBROBLAST GROWTH FACTOR 21 LEVELS IN PATIENTS WITH HYPERTHYROIDISM AND ITS ASSOCIATION WITH BODY FAT PERCENTAGE**

**Background:** Most of the actions of thyroid hormone on body metabolism like maintenance of basal metabolic rate (BMR) and body fat are similar to that of FGF21. We hypothesized that in patients with hyperthyroidism, the pathological changes in the BMR and body fat are mediated by thyroid hormone through FGF21.

**Objectives:** To study the association of serum FGF21 levels with hyperthyroidism and correlate body fat percentage with serum FGF 21 levels in hyperthyroid patients.

**Study design:** Case-control prospective follow up study

**Methodology:** A total of 68 hyperthyroid patients and 63 age, sex-matched healthy controls who fulfilled the inclusion and exclusion criteria were studied. Among them, 45 cases were followed up at 3 to 6 months after achievement of euthyroidism. Body fat percentage was calculated from Jackson and Pollock 3 site equation and Siri equation. BMR percentage was calculated by Gale formula. Serum FGF21 levels were determined using the ELISA method.

**Results:** The mean age in years in the cases was similar to that of controls ( $36.14 \pm 10.01$  vs.  $36.57 \pm 10.53$   $p=0.81$ ). The serum FGF 21 levels at baseline were significantly elevated in patients with hyperthyroidism compared to controls [ median  $406.6$  pg/ml ( $262.9-655.6$ ) vs  $252.3$ ( $125.1-341$ )  $p < 0.001$ ] and declined following treatment with antithyroid drugs [ $405$  ( $275.5-680.4$ ) vs  $203.6$ ( $154.6-230.6$ )  $p < 0.001$ ]. Serum FGF21 levels negatively correlated with body fat percentage ( $r = -0.268$   $p = 0.002$ ). After adjusting for various confounding factors, serum FGF21 was independently associated with hyperthyroidism. (OR [95 %CI]  $3.78$ ( $1.046-13.666$ )  $p = 0.043$ ).

**Conclusion:** Serum FGF21 levels were elevated in hyperthyroid patients and decreased following treatment with antithyroid drugs. It is independently associated with hyperthyroidism. FGF21 may be

responsible for the pathological increase in BMR percentage and decrease in body fat percentage. So there may be a future therapeutic role of FGF21 inhibition in the reversal of these changes in addition to antithyroid drugs in patients with hyperthyroidism.