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Introduction & Objectives: There is conflicting literature regarding the clinical significance of pre-treatment Testosterone (T) levels and the development of prostate cancer (PCa). In the current study, we investigated the association of serum T levels with PCa and compared it with that of controls of benign enlargement of prostate (BEP). Association of T levels with the histological grade and stage of prostate cancer was also seen.

Materials & Methods: This prospective observational study included patients diagnosed with PCa and BEP (patients with normal PSA and Digital rectal exam [DRE] or increased PSA with negative biopsy). Inclusion criteria were patients of biopsy-proven prostate cancer with age > 40 years. Patients on hormonal therapy (medical or surgical castration), anti-androgens, and exogenous T supplements, history of chronic liver disease, chronic kidney disease, BMI more than 30 kg/m² and disease of the hypothalamo-pituitary axis were excluded. Suspected cases of prostate cancer underwent digital rectal examination, routine blood investigation, PSA measurement, T level estimation and staging investigation. The findings of prostate biopsies and Gleason score were recorded. Age-matched patients of BEP were selected as controls and underwent blood investigations.

Results: 171 (110 Cases and 61 Controls) patients were included in the study. On comparing the serum T between the two groups, median (IQR) serum T level in PCa patients was significantly lower as compared to controls [352.28 ng/dl (224.99 -563.17) vs. 437.80 ng/dl(382.00- 437.80), (p = 0.007)]. The median T level in localised PCa patients was 452.30 ng/dl (363.69-653.74), locally advanced PCa patients group was 352.70 ng/dl (118.97-586.98) and in metastatic PCa patients group was 298.20 ng/dl (161.30-476.10). T level in metastatic PCa was significantly lower than the localised PCa group (p=<0.05). Median serum T level was also significantly lower in patients with Gleason score ≥8 than in patients with Gleason score ≤7 [285.92 ng/dl (149.97- 560.40) vs. 425.13 ng/dl (320.43- 571.46) (p= 0.002)].

Conclusions: This study supports the findings that PCa is associated with low serum T levels compared to BEP patients. Serum T level also has prognostic value since a low pre-treatment serum T level is associated with a higher clinical stage and aggressive PCa.