Type of Androgen Deprivation Therapy Affects Metabolic Condition and Adipose Tissue Distribution

Introduction and Objectives: The adverse events of androgen deprivation therapy (ADT) to prostate cancer patients are associated with metabolic condition and adipose tissue increasing. We evaluated whether type of androgen deprivation therapy affects metabolic condition and adipose tissue distribution.
Materials and Methods: From January 2003 to March 2011, we performed definitive therapy with 6 months neoadjuvant ADT to 445 prostate cancer patients in our hospital. Among them, we analyzed the data available on 146 prostate cancer patients. We retrospectively evaluated the metabolic values (glycohemoglobin (HbA1c), total cholesterol (T-cho), triglyceride (TG) value and body mass index (BMI)) and adipose distribution (subcutaneous and visceral) before and after ADT. One hundred and nine patients received radical prostatectomy, 28 patients with extra beam radiotherapy and 9 patients with brachytherapy. We divided patients in two groups according to the regimen of ADT; combined androgen blockade (LH-RH analog with anti-androgen drug: Bicalutamide, CAB) and LH-RH analog with estramustine (EMP) groups. The difference of BMI and adipose volume were compared between CAB and EMP group. Adipose volumes (total, subcutaneous and visceral) and abdominal circumference before and after 6 months ADT were analyzed from computed tomography by Visceral Fat Analyzer, M2 ver2.3.
Results: There were no significant difference in age, BMI, clinical stage and initial PSA between CAB and EMP group. HbA1c and T-cho values were significantly deceased in EMP group ($P < 0.001$) but TG was not different between the two groups. BMI was significantly increased in CAB ($P < 0.001$) but not changed in EMP group. Total adipose volume was significantly increased in CAB ($P <0.001$) but decreased in EMP group ($P = 0.027$) during the 6 months ADT. The Subcutaneous fat increased in both groups ($P < 0.001$), and the visceral fat was increased in CAB but decreased in EMP ($P < 0.001$). There was no change in abdominal circumference. Adipose increasing rates correlated with ADT duration.
Conclusions: Although the present study is retrospective, the above data suggest that ADT regimen of LH-RH analog with estramustine has potential to suppress visceral fat increases and improve glucose-lipid metabolism in the prostate cancer patients.