

RELATIONSHIP OF VOLUMETRIC BMD AND STRUCTURAL PARAMETERS TO ER α GENE POLYMORPHISMS IN MEN

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Bone strength is determined by bone mineral density (BMD) and bone quality, which encompasses a number of dynamic processes, such as bone turnover, mineralization, microarchitecture, and geometry; therefore BMD reflects only one component of bone strength and methods for clinical assessment of bone quality are awaited. Peripheral quantitative computed tomography (pQCT) allows for separate assessments of cortical and trabecular bone and provides direct information on bone geometry. Both BMD and bone structure have a strong genetic component. Previous studies examining the relationship between estrogen receptor α (ER α) polymorphisms and BMD have been performed on women. However, there are no comparable published data for men. Moreover, only few studies have investigated the possible role of ER α polymorphisms on bone properties, as assessed by pQCT. The aim of our study was to evaluate the association of *Xba*I and *Pvu*II polymorphisms of the ER α with pQCT parameters in men.

We studied 449 men, age range: 53-92 years, participating to the InCHIANTI study. In all subjects we performed pQCT (XCT 2000, Stratec, Germany) at the tibia level obtaining the follow parameters: trabecular vBMD (vBMDt, mg/cm³), cortical vBMD (vBMDc, mg/cm³), cortical bone area (tCSA mm²) and cortical thickness (Ct.Th, mm). The subjects have been genotyped for the *Pvu*II and *Xba*I polymorphisms, identifying, respectively X and x, P and p alleles, according to the absence (X, P) or the presence (x, p) of the restriction sites.

No significant effects on pQCT parameters were seen for *Xba*I. Regarding *Pvu*II polymorphisms, multivariate regression analysis showed a negative trend in all densitometric and geometric parameters in PP group with respect to Pp and pp group, although the differences did not reach statistical significance. Analyzing PP respect to Pp and pp together, Ct.Th showed a significant ($p < 0.05$) higher values in the first group, also after adjustment for multiple confounders.

These results indicate a relationship between the presence of PP allele and higher values of Ct.Th and suggest that bone geometry could be influenced by *Pvu*II polymorphisms in men.