JCEM THE JOURNAL OF CLINICAL ENDOCRINOLOGY & METABOLISM







# Benign prostatic hyperplasia and normal prostate aging: differences in types I and II 5 alpha-reductase and steroid hormone receptor messenger ribonucleic acid (mRNA) levels, but not in insulin-like growth factor mRNA levels.

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DOI: http://dx.doi.org/10.1210/jcem.77.5.7521342

## Abstract

Benign prostatic hyperplasia (BPH) is so common in elderly men that the development of adenomatous nodules in this organ can be seen as a normal age-dependent process. In this work, we used Northern blotting to compare the levels of androgen, estrogen, and insulin-like growth factor-I (IGF-I) receptor in young (age range, 23-33; n = 3), old normal (age range, 52-80; n = 3), and BPH-affected subjects (age range, 66-87; n = 15). We have also investigated in these groups the expression of genes coding for the two 5 alpha-reductases (types I and II), aromatase, IGF-I, and IGF-II. Our results show significantly increased levels of IGF mRNA in old healthy and BPH-affected subjects; the respective rises for IGF-I, IGF-II, and IGF-I receptor mRNAs were 3.0-, 2.9-, and 1.5-fold (BPH) and 2.7-, 2.4-, and 1.8-fold (old normal controls). For estrogen receptor, androgen receptor, and type I and II 5 alpha-reductase mRNAs, a marked but opposite effect was observed in adenomatous tissues only; the respective levels were 2.2-, 1.8-, 3.9-, and 1.7-fold lower than those in young adult subjects, whereas no significant differences were recorded between the two normal groups. Morphometric analysis of each tissue specimen confirmed the significantly lower epithelium/stroma ratio in adenomas compared to young or old healthy tissues. Together, these observations suggest that prostatic adenomas may result from at least two conjugate processes: one characterized by a drop in the mRNA levels of steroid hormone receptors, which might be associated with a lower epithelium/stroma ratio, and another characterized by normal aging phenomena, of which the increased production of IGFs and IGF-I receptor transcripts could be biochemical markers.