Role of Anti-androgens in the Treatment of Benign Hyperplasia of Prostate

Androgens are essential for the development and growth of the prostate gland and play an important role in the development of benign prostatic hyperplasia. (BPH) and prostatic cancer[1,2]. Testosterone is the major source of androgen, comprising about 90% and other sources are adrenal glands and peripheral conversion. Castration in childhood fails prostatic development and secondary sex character[3]. Testosterone plays its action mainly by converting into dihydrotestosterone (DHT) by the enzyme 5-α reductase. DHT then binds with cytoplasmic androgen receptor protein forming a complex, which stimulates different activities of the cell e.g. growth of prostate and BPH[4].

Anti-androgens play an important role in prevention of BPH and treatment of prostatic cancer[5]. There are at least three non-steroidal anti-androgens viz. flutamide, bicalutamide and nilutamide. Flutamide has shortest serum half life of about six hours and needs eight hourly dosing. Nilutamide, on the other hand, is more potent and has got longer serum half life, requiring a single daily dose. Both the drugs block the action of testosterone by blocking androgen receptors at cellular level, thus preventing specific stimulatory androgenic activities of the cell. Use of flutamide as treatment of BPH is not popular due to multiple dosing, economic factors and it's complications like hepatotoxicity, gynaecomastia, breast tenderness etc. Rather flutaimde is used for the treatment of prostate cancer. It has been found that androgen causes reduction of size of the prostate by potentiating more apoptosis and cell death in epithelial and stromal tissues. It has been found that flutamide increases expression of cell cycle related gene CDKN14, that blocks cell cycle progression.

Other group of anti-androgens, like finesteride and dutasteride are being used increasingly in the treatment of BPH along with α-blockers. It potentiates the action of α-blockers in a different way increasing urinary flow rates. These drugs are the competitive inhibitors of enzyme 5-α reductase and have a greater impact on inhibiting serum DHT levels.

The study of Rahman et al on the "Role of flutamide on acinar diameter in testosterone induced hyperplasia" in Long Evan's rat model, that has been published in this issue has again proved that testosterone (androgen) has significant role in causing BPH which can effectively be blocked by flutamide (anti-androgen). This experimental model supports the established findings of other investigators working in this field.

References:

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