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FUNCTIONAL UROLOGY

Alpha–blocker and apoptosis

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The manuscript entitled "α–blockade, apoptosis and prostate shrinkage: how are they related?" published in this issue reviews the recent literature that links alpha–1 adrenoreceptor antagonists with apoptosis and reduction of prostate size [1]. Alpha–1 adrenoreceptor antagonists have been linked with reducing prostate vascularity in both benign and malignant cells *in–vitro*. This has also been demonstrated experimentally *in–vitro* by inducing apoptosis. This is only applicable with quinazoline based alpha blockers such as doxazosin and not sulphonamide based alpha blockers such as tamsulosin. The authors review the pathways that lead to apoptosis though the Tumor Necrosis Factor receptors (TNFR) pathways. The confounding finding of why in *in–vitro* experiments there is both apoptosis and decrease in prostatic vascularity in specific cell lines, though clinically no such findings are seen. The authors discuss the roles of the epithelial and mesenchymal interplay with the specific role of stem cells and their resistance to apoptosis through the use of quinazoline based pathways. Further the authors discuss the inherent flaws in current *in–vitro* experiments on specific immortalized or tumor cell lines that lack the complex interaction between the epithelial and mesenchymal elements of the prostate.

This manuscript addresses some very important questions about the complex cellular interplay of the first line agents used in the treatment of lower urinary tract symptoms secondary to benign prostatic hyperplasia. These medications are commonly used to reduce the tone of the smooth muscle of the prostate. Based on *in–vitro* experiments, these medications should also reduce prostate volume however they do not. The regenerative nature of stem cells within the prostate seems to counter–act this effect, once again highlighting the complexities of drug–target interactions within the prostate gland.

References

1. Chłosta PL, Drewa T, Kaplan SA. α–blockade, apoptosis and prostate shrinkage: how are they related? Cent Eur J Urol. 2013; 66: 189–194

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