Assessment of Use of Cyproterone Acetate Preoperatively on TURP Outcome

Thesis

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List of Abbreviations

Abb.	Full term
5-ARIs	5α-reductase inhibitors
AUA	American Urological Association
AUR	Acute urinary retention
BoNT-A	Botulinum toxin-A
BOO	Bladder outlet obstruction
BPH	Benign prostatic hyperplasia
BPO	Benign prostatic obstruction
CBC	Complete blood count
CKD	Chronic kidney disease
CT	Computed tomography
CUR	Chronic urinary retention
DAB	Diaminobenzidine
DAN-PSS	The Danish Prostate Symptom Score
DHT	Dihydrotestosterone
DRE	Digital rectal examination
ED	Erectile dysfunction
FVC	Frequency volume chart
GFR	Glomerular filtration rate
H&E	Haematoxylin-eosin
HF	High-frequency
Ho:YAG	Holmium:yttrium-aluminium garnet
ICIQ-MLUTS	The International Consultation on Incontinence Questionnaire
ICS	International Continence Society
IFIS	Intraoperative floppy iris syndrome
IHC	Immunohistochemical
IPSS	International prostate symptom score
IVU	Intravenous urography
LBO	Lithium triborate
LH	Luteinising hormone
LUTS	Lower Urinary Tract Symptoms
MRI	Magnetic resonance imaging
MVD	Microvessel density

List of Abbreviations Cont...

Abb.	Full term
PSA	Prostste specific antigen
PVP	Photoselective vaporization of the prostate
PVR	Post-void residual
QoL	Quality of life
SNAP-25	Synaptosome-associated protein 25
Tm:YAG	Thulium:yttrium-aluminium-garnet laser
TUIP	Transurethral incision of the prostate
TUMT	Transurethral microwave therapy
TUNA	Transurethral needle ablation of the prostate
TUR	Transurethral resection
TURP	Transurethral resection of the prostate
UEBW	Ultrasound-estimated-bladder weight
UTI	Urinary tract infection
VEGF	Vascular endothelial growth factor

INTRODUCTION

Transurethral resection of the prostate (TURP) has become the primary method to relieve bladder outlet obstruction for patients with benign prostatic hyperplasia (BPH). Perioperative bleeding is usually on the top of the list of TURP complications and they are directly related to the size of the gland [1].

On the other hand, the prostate is an androgen dependent organ and it has been shown before that the preoperative reduction of dihydrotestosterone after finasteride administration is associated with a significant reduction in perioperative bleeding with TURP [2].

This effect is thought to be mediated by reduction of androgen dependent growth factors that is reflected into a significant decrease in angioneogensis and vascularity of the prostate [3].

It has been shown that suppression of angiogenesis through antiandrogen is used as a treatment for patients with hematuria from prostatic origin [4].

Finasteride and cyproterone acetate have comparable control in hematuria recurrence in patients with BPH, thus

confirming the rationale behind the use of antiandrogen for such a purpose [5].

It was found also that patients using antiandrogen have significant decrease in prostate size with increase in the maximum flow rate during spontaneous micturation [6].

Cyproterone acetate is the classic steroidal antiandrogen with direct androgen blocking effects. It inhibit binding of testosterone and dihydrotestosterone to the nuclear androgen receptors, inhibit 5α-reductase, and has negative feedback on the hypothalamic pituitary axis [7].

AIM OF THE WORK

The aim of the current study was to evaluate the impact of pre-treatment with Cyproterone Acetate as an antiandrogen on blood loss during Transurethral Resection of Prostate (TURP).

REVIEW OF LITERATURE

Definition of BPH

Benign prostatic hyperplasia (BPH) is a histologic diagnosis that refers to the proliferation of smooth muscle and epithelial cells within the prostatic transition zone.[8,9]

Benign prostatic enlargement is used when there is gland enlargement and is usually a presumptive diagnosis based on the size of the prostate. Benign prostatic obstruction (BPO) is used when obstruction has been proven by pressure flow studies, or is highly suspected from flow rates and if the gland is enlarged. Bladder outlet obstruction (BOO) is the generic term for all forms of obstruction to the bladder outlet (e.g., urethral stricture) including BPO.

Although LUTS secondary to BPH (LUTS/BPH) is not often a life-threatening condition, the impact of LUTS/BPH on quality of life (QoL) can be significant and should not be underestimated.[10]

Epidemiology

Benign prostatic hyperplasia (BPH), one of the most common diseases of aging men.[11]

The prevalence of BPE/BPH and LUTS rises markedly with aging. It is estimated that nearly 50% of all men at the age

of 60 have histological BPH, and by age of 80 the prevalence approaches 90%.[12]

Moderate to severe LUTS were reported by 26% of men 40–49-year-old and almost doubled in those 70-year-old or older.[13]

Etiology of BPH

The precise molecular etiology of BPE/BPH is complicated and poorly understood, although several risk factors for the development of BPE/BPH and LUTS have been identified. These include age, hormones, growth factors, inflammation, and lifestyle factors.[14]

Age:

Age itself is the major risk factor for BPE/BPH and LUTS. The aging process involves changes in cellular mitogenesis and hormonal homeostasis in the prostate gland, which later proceed to chromosomal aberration and apoptosis [15]. Aging is also associated with inflammation and microvascular disease. Both chronic and acute inflammation may lead to events that can cause proliferation within prostatic tissue through a variety of mechanisms, notably oxidative stress.Over time both tissue damage and oxidative stress may lead to compensatory cellular proliferation with resulting hyperplastic growth. [16]

- ***Hormones:***

Sex steroid hormones have been affirmatively linked with the development and maintenance of BPE/BPH. In the prostate testosterone is converted to dihydrotestosterone (DHT) by type II 5α reductase. Androgen through DHT/androgen receptor influence cell proliferation, differentiation, morphogenesis, and functional maintenance [17]. The use of 5α reductase inhibitors in a clinical setting was found to decrease serum concentrations of DHT and slow progression of clinical BPH [18].

Androgen deprivation therapies typically induce a drastic regression of mature prostate tissue that is accompanied by the extensive loss of prostate cells through the programmed cell death process referred to as apoptosis.[19]

Although not yet conclusive, estrogens (both endogenous and exogenous) and selective estrogen receptor modulators may have a role in regulating stromal-epithelial interactions involved in prostatic cellular growth [20]. To date, there is no clear and consistent link between other sex steroid hormones and BPE/BPH.[21]

- ***Growth factors:***

Several growth factors and their corresponding receptors have been identified in prostatic epithelium and stroma, which can stimulate or inhibit cell division and differentiation

processes. These include epidermal growth factor, fibroblast growth factor, and transforming growth factor-β, but this list is by no means exhaustive. Activation of these growth factors alone or in combination can induce stromal cell growth, followed by significant tissue remodeling, which is responsible for prostate enlargement [22].

- ***Inflammation:***

There is a growing body of evidence that suggests that inflammation is closely linked to the development of BPE/BPH and LUTS. From a histological point of view, inflammatory infiltrates are the most prevalent feature coexisting with BPH, and the degree of inflammation is correlated with prostate volume and weight. [23]

Pathophysiology of BPH

The term benign prostatic hyperplasia (BPH) describes a proliferative process of the cellular elements of the prostate or the voiding dysfunction resulting from prostatic enlargement and bladder outlet obstruction. Histologically, BPH describes a proliferative process of both the stromal and epithelial elements of the prostate gland. BPH arises in the periurethral and transition zones of the prostate. [24]