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**TOPIC: PROSTATIC DISORDERS**

ANATOMY OF THE PROSTATE GLAND

The prostate gland lying just below the neck of the bladder is composed of four zones and four lobes. It surrounds the urethra and is transverse by the ejaculatory duct, a continuation of the vas deferens. It produces a secretion that is chemically and physiologically suitable to the needs of the spermatozoa in their passage from the testes.

DISORDERS OF THE PROSTATE GLAND

1. PROSTATITIS

It is an inflammation of the prostate gland which is often associated with lower urinary tract symptoms and symptoms of sexual discomfort and dysfunction. It affects 5-10% of men. It is the most common urologic diagnosis in men below 50 years and third most common in men above 50 years.

AETIOLOGY: It may be caused by infectious agents (bacteria, fungi, mycoplasm) or other conditions such as urethral stricture and benign prostate hypertrophy. *Escherichia coli* are the most commonly isolated organism, although *Klebsiella and Proteus* species are also found.

TYPES: Acute bacterial prostatitis (type I), chronic bacterial prostatitis (type II), chronic prostatitis/ chronic pelvic pain syndrome (CP/CPP) (type III) and asymptomatic inflammatory prostatitis (type IV).

S/S: Sudden onset of fever, dysuria, perineal prostatic pain, frequency, urgency, hesitancy and nocturia.

THERAPEUTIC INTERVENTIONS: Goal of treatment is to eradicate causal organism. Specific treatment is based on the type of prostatitis and on the results of culture and sensitivity testing of the urine.

If bacteria are cultured from the urine, antibiotics such as trimethoprim-sulfamethazole (bactrim) or fluoroquinolone (e.g. ciprofloxacin) may be prescribed and continuous theraphy with low dose antibiotic agents may be used. If the patient is afebrile and has a normal urinalysis anti-inflammatory agents may be used. Alpha-adrenergic blocker theraphy (e.g., tamsulosin [Flomax]) may be prescribed to promote bladder and prostate relaxation.

Supportive nonpharmacologic therapies such as biofeedback, pelvic floor training, physical theraphy, reduction of prostatic fluid retention by ejaculation through sexual intercourse or masturbation, sitz baths, stool softeners and evaluation of cross-partners to reduce the possibility of cross infection is done to reduce stress, neuromuscular factors and myofacial pain.

NURSING MANAGEMENT:

1. Administration of prescribed antibiotics and provision of comfort measures such as sitz baths and prescribed analgesic agents.
2. Education of outpatients on the importance of continuing antibiotic theraphy and recognizing recurrent signs and symptoms of prostatitis.

CLIENT EDUCATION: The nurse educates the patient on the importance of completing the antibiotic theraphy and also on the correct and safe administration of IV antibiotics if they are to be given at home. Warm sitz baths (10 to 20 minutes) may be taken several times daily. Fluids are encouraged to satisfy thirst but not forced as an effective medication level must be maintained in the urine. Patient should avoid foods and liquids with diuretic action or that increase prostatic secretions, such as alcohol, coffee, cola, tea, chocolate, and spices. During periods of acute inflammation, sexual arousal and intercourse should be avoided. Patients should avoid sitting up for long periods to minimize discomfort. Medical follow-up is necessary for at least 6 months to a year because prostatitis can recur and patients should be educated to recognize its symptoms.

2. BENIGN PROSTATE HYPERPLASIA (ENLARGED PROSTATE)

It is a noncancerous enlargement of the prostate and one of the most common diseases in aging men. It can cause bothersome lower urinary tract symptoms that can affect quality of life by interfering with normal daily activities and sleep patterns. It is the second most common cause of surgery in men older than 60 years.

AETIOLOGY: Elevated estrogen level, reduced sensitivity to dihydrotestosterone.

RISK FACTORS: Smoking, heavy alcohol consumption, obesity, reduced activity level, hypertension, heart disease, diabetes and a western diet.

S/S: Urinary frequency, urgency, nocturia, hesitancy in starting urination, abdominal straining with urination, sensation of an incomplete bladder emptying.

MEDICAL MANAGEMENT: Goals are to improve quality of life, improve urine flow, relive obstruction, prevent disease progression, and minimize complications. If a patient is unable to void, he is immediately admitted and catheterized. A cystostomy may also be done to provide urine drainage. Pharmacological theraphy or surgery can be used to treat benign prostate hypertrophy.

Pharmacological Theraphy: Pharmacological treatment for benign prostate hypertrophy include the use of alpha-adrenergic blockers such as alfuzosin (Uroxatral), terazosin (Hytrin), doxazosin (Cardura) and tamsulosin with 5-alpha-reductase inhibitors.

Another method of treatment is hormonal manipulation with antiandrogen agents. The 5-alpha-reductase inhibitors finasteride (Proscar) and dutasteride (Avodart) are used to prevent the conversion of testosterone into dihydrotestosterone and decrease prostate size. Combination theraphy (doxazosin and finasteride) has decreased symptoms and reduced its clinical progression.

The use of complementary and alternative phytotherapeutic agents and other dietary supplements such as (*Serenoa repens* [saw palmetto berry] and *pygeum africanum* [African plum]) are commonly used although not recommended by the medical community. They prevent conversion of testosterone into dihydrotestosterone and directly block the ability of dihydrotestosterone to stimulate prostate cell growth.

SURGICAL MANAGEMENT: Other treatment options include minimally invasive procedures and resection of the prostate gland.

Minimally Invasive Procedures: Several forms of minimally invasive procedures may be used to treat benign prostate hyperplasia. Transurethral microwave thermotherapy (TUMT) involves the use of heat to prostatic tissue. There is high energy TUMT devices and low energy ones. A transurethral probe is inserted into the urethra and microwaves are directed into the prostatic tissue, the targeted tissue becomes necrotic and sloughs.

Other procedures are transurethral needle ablation (TUNA) by radiofrequency and the UroLume stent which is only used for patients with urinary retention and in patients who are poor surgical risks.

Surgical Resection: **Transurethral Resection of the prostate (TURP)** is the benchmark for surgical treatment of BPH. It involves the surgical removal of the inner portion of the prostate through an endoscope inserted through the urethra; no external skin incision is made. The treated tissue either vaporizes or becomes necrotic and sloughs. It is performed in outpatient setting and results in less bleeding.

 Other surgical options include transurethral incision of the prostate (TUIP), transurethral electrovaporization, laser therapy, and open prostatectomy. **Open prostatectomy** involves the surgical removal of the inner portion of the prostate via a suprapubic, retropubic, or perineal approach for larger prostate glands. **Transurethral incision of the prostate (TUIP)** is used to treat smaller prostates. One or two are made in the prostate and prostate capsule to reduce constriction of the urethra and decrease resistance to urine flow out of the bladder. No tissue is removed.

NURSING MANAGEMENT:

1. The nurse should familiarize the patient with preoperative and postoperative routines and initiate measures to relive anxiety.
2. Bed rest and prescribed analgesics are given if patient experiences discomfort
3. The nurse ensures fluid balance is maintained.
4. Ensure irrigation of the bladder in patients who has undergone prostatectomy.

CLIENT EDUCATION: The nurse should provide written and oral instructions on the need to monitor urinary output and strategies to prevent complications. Patients are educated on perineal exercises to regain urinary control. The patient should avoid activities that produce Valsalva maneuver like straining and heavy lifting. Patients should also avoid spicy foods, alcohol and coffee. The nurse should also instruct the patient to drink enough fluid.

3. CANCER OF THE PROSTATE

It is the most common cancer in men other than nonmelanoma skin cancer. Prostate cancer is common in United States and north-western Europe but rare in Africa, Central America, South America, China and other parts of Asia. Other risk factors include increasing age after 50 years, family history, BRCA1 and BRCA2 gene mutations, excess consumption of red meat and dairy products high in fats, and endogenous hormones such as androgens and estrogens.

AETIOLOGY: The exact cause is not easy to determine but in most cases a combination of genetics and exposure to environmental toxins like certain chemicals or radiation can be the cause.

S/S: Difficulty and frequency of urination, urinary retention, decreased size and flow of the urinary stream, hematuria, blood in semen, painful ejaculation, backache, hip pain, anemia, weight loss, weakness.

MEDICAL MANAGEMENT: Medical management can either be surgery, radiation therapy, hormonal strategies, and chemotherapy e.t.c.

A. SURGICAL MANAGEMENT: Radical prostatectomy is considered the first line of treatment for patients with prostate cancer and whose tumor is confined to the prostate. It is the complete removal of the prostate, seminal vesicles, tips of the vas deferens and often the surrounding fat, nerve and blood vessels. It can be done laparoscopically or with robot assisted laparoscope. Although sexual impotence is a common side effect, it has a low morbidity rate, more favourable postoperative outcomes, including an improved quality of life and less sexual dysfunction if the nerves are spared.

B. RADIATION THERAPY: Two major forms of radiation therapy are used and they are teletherapy and brachytheraphy. **Teletherapy** (external-beam radiation therapy) is prescribed by the radiation oncologist for a total dose over a certain time frame, for example 28 treatments over 5 weeks. It is an option for people with low-risk prostate cancer. People with intermediate and high risk cancers receive higher dose of EBRT. Intensity-modulated radiation therapy is a method of EBRT delivery. Another approach is the use of a computer controlled robotic arm to deliver a course of radiotherapy to localized prostate cancer.

 **Brachytherapy** involves the implantation of interstitial radioactive seeds under anesthesia. It is a commonly used monotheraphy treatment option for early, clinically organ-confined prostate cancer. The surgeon uses ultrasound guidance to place 80-100 seeds and the patient returns home after the procedure. High risk patients are considered poor candidates for permanent brachytherapy.

 Side effects of EBRT and brachytherapy are proctitis, enteritis, cystitis, acute urinary dysfunction, pain with urination and ejaculation. Late side effects include rectal proctitis, bleeding and rectal fistula, painless hematuria, chronic interstitial cystitis, urethral stricture erectile dysfunction, and rarely secondary cancers of the rectum and bladder.

C. HORMONAL STRATEGIES: Androgen deprivation theraphy is commonly used to suppress androgenic stimuli to the prostate by decreasing the level of circulating plasma testosterone or interrupting the conversion to or binding of dihydrotestosterone. As a result, prostatic epithelium atrophies. This effect is accomplished either by surgical castration (bilateral orchiectomy, removal of one or both testes) or by medical castration with the administration of medications such as luteinizing hormone-releasing agonists (leuprolide [Lupron], goserelin [Zoladex]). Bilateral orchiectomy decreases plasma testosterone levels significantly, thus, the testicular stimulus required for continued prostatic growth is removed, resulting in prostatic atrophy.

 Another category of medication used is the adrenal ablating drugs. Ketoconazole (Nizoral) is used to inhibit cytochrome P450 enzymes which are required for the synthesis of androgens and other steroids. Administration of this medication requires steroid supplementation to prevent adrenal insufficiency.

 Hypogonadism is responsible for the adverse effect of androgen deprivation therapy which includes vasomotor flushing, loss of libido, decreased bone density, anemia, fatigue, increased fat mass, gynecomastia and mastodynia.

 D. CHEMOTHERAPY: Chemotherapy treatment that includes a docetaxel-based regimen has clear benefits for treating non-androgen-dependent prostate cancer. Though still under research, antiangiogenic treatments in combination with conventional therapies may play a future role in the treatment and also gene-based theraphy is also an emerging and promising possibility for treatment.

E. OTHER THERAPIES: Cyrosurgery of the prostate is used to ablate prostate cancer in patients who cannot tolerate surgery and in those with recurrent prostate cancer. Keeping the urethral passage patent may require repeated transurethral resection of the prostate or institution of catheter drainage by way of the suprapubic or transurethral route. Palliative measures are indicated for men with advanced prostate cancer. Opiod and nonopioid medications are used to control bone pain as a result of bone lesions in cases of metastasis. Radiopharmaceuticals such as strontium or samarium can be injected intravenously to treat multiple sites of bone metastasis. Biphosphonate therapy with pamidronate (Aredia) can be given to reduce the risk of pathological fracture. In advanced prostate cancer patients, blood transfusion are given to maintain adequate level of hemoglobin when bone marrows are replaced by tumors.

NURSING MANAGEMENT:

1. The nurse should for a nurse-patient relationship with the patient so as to allow the patient feel free to discuss all concerns and the nurse should try as much as possible to listen and help allay fear
2. Monitor catheter function and maintain sterility of closed system.
3. Assist patient in choosing the right plan of care or treatment.

CLIENT EDUCATION: The nurse should educate patient on the diagnosis and treatment plan. The patient should be educated on perineal exercises that will help regain urinary control. Patients should avoid straining such as during exercises, bowel movement, lifting and sexual intercourse. Patients should also avoid sitting, standing, walking for prolonged period of time. Encourage urination every 2-3 hours and discourage voiding when supine. Patients should avoid cola, caffeine, and drinking of fluids late at night.