Prostate Cancer In Nigeria

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INTRODUCTION

The prostate gland is located at the base of the urinary bladder, shaped like chestnut and weighing 15-20g in adult. The growth of the gland is directly under the influence of androgens and oestrogens: the growth of fibromuscular stroma which constitutes about 30% of the gland volume is under the influence of oestrogens while the proliferation of the glandular elements (about 70% of the gland) is induced by androgens [1,2]. In adolescents, there is a surge in the growth of the gland due to increased androgen production. It has been suggested that cancer of the gland can result from excessive hormonal stimulation, although this is still contentious[3-5].

Although the prostate gland is naturally a small gland, when diseased, it produces disproportionate serious discomfort and consequences to the health of patients by virtue of its unique location in the bladder neck, through which passes the posterior urethra. This is readily obstructed thereby causing impairment of the flow of urine. This prospect confers clinical significance and draws social attention to the gland. The global rising incidence of prostate cancer and the various world leaders that have been victims of this disease have also attracted global attention to this disease.

Prostate cancer is a disease of elderly and middle-aged male patients. It affects the rich and the poor, and virtually no race is exempted. The incidence and severity of prostate cancer is especially commoner and more severe in blacks compared to the Caucasians. This has been suggested to be due to slightly higher circulating androgens in the blacks[6].

While the pattern of presentation is changing all over the world with many cases now diagnosed in early stage, most of our patients in our community, still present with advanced diseases where complications would have set in. Thus there is a the need for an improved awareness through public enlightenment, early diagnosis and prompt intervention.

AGE PREVALENCE AND INCIDENCE RATES

In this environment, the peak incidence of prostate cancer occurs in the seventh decade of life (range 46-99yrs) and over 86% of the cases occur between the ages of 50 and 80years. An earlier report indicates that the incidence in African-American men increased from 124 per 100,000 in 1986 to 250 per 100,000 1993, a report that compares well with the findings by Osegbe in Lagos, Nigerian[7]. At Ile-Ife, our record indicates that the yearly incidence rate has risen progressively from 254 per 10^5 male hospital admissions in 1991 to 471 per 10^5 male hospital admissions in 1999.

AETIOLOGY OF PROSTATE CANCER

The aetiology of prostate cancer is unknown. Hereditary factor, age, hormonal and environment factors appear to play role in the development of prostate cancer.

Age: The risk of prostate cancer increases with age. In this environment, prostate cancer is common between the 6^{th} and 8th decades with peak incidence in the 7^{th} decade of life.

Hormonal factor: Our understanding of the influence of male hormone on prostate cancer form the basis of hormonal manipulation in the treatment of prostate cancer[3]

- **Hereditary**: About 10% of prostate cancers are believed to be inherited.[8]. Multiple hereditary prostate cancer genes (HPC gene) have been identified in many high-risk families.
- **Racial factors**: Global epidemiological surveys have shown racial differences in the incidence of prostate cancer. The incidence is low amongst the Asians especially the Japanese and the Chinese. Studies have also shown that both the incidence and severity of prostate cancers are higher in black race compare to the whites[6].
- **Diet:**
Influence of diet is particularly more relevant in

sporadic cases of prostate cancer. It has potential to induce the growth of latent prostate cancer to clinical (symptomatic) types. Although controversy still exists, some of these are believed to have positive or negative influence in the development of prostate cancer.

- *High fat diet*. Diet with high fat content especially saturated fats and omega-6 fatty acids, such as linolenic acid have been linked with increased risk of prostate cancer [9,10].
- *Avitaminosis A*. Vitamin A is believed to confer protection against the development of prostate cancer.
- *Animal protein*: Is believed to enhance the development of prostate cancer.
- *Plant protein*: Is believed to reduce the risk of development of prostate cancer
- *Avitaminosis D*: Vitamin D is a steroid hormone that has been shown to have anti-tumor activity [11, 12]. Avitaminosis D has been linked with increased incidence of prostate cancer. It has been suggested that higher incidence of prostate cancer in northern-latitude countries like Sweden and Denmark are due to low exposure to UV light.
- *High calcium intake*: Has also been linked with increased incidence of prostate cancer. The high levels of calcium could possibly reduce vitamin D production, and thereby promote cell proliferation.
- *Lycopene*: Is a carotenoid and a potent antioxidant which has been found to reduce prostate cancer risk by 35%. It is present in high concentrations in tomatoes [13].

- *Selenium*: Selenium is a trace mineral component of the antioxidant glutathione peroxidase which has been found to reduce the risk of prostate cancer [14 15].

- *Cadmium*. Has also been implicated.

Exposure to ionizing irradiation may increase the risk of developing prostate cancer. Contrarily, exposure to ultraviolet rays is suspected to reduce the risk of developing prostate cancer. The effect of this may be indirect, via increase in production of vitamin D. This may be responsible for the lower incidence of prostate cancer in the southern part of the United State that lies within the tropics compared to the northern part, and the high incidence in Sweden and Denmark as highlighted above.

These factors may increase the risk of prostate cancer:

- *Cigarette smoking* is a potential risk factor [16,17].
- *Alcohol*: Is expected to have a protective effect because it reduces circulating androgens level and increases oestrogen level. Its real impact on prostate cancer has not been fully established.
- *Sexual Activity*: Some reports have linked sexual activities especially early exposure and multiple sexual partners to increased risk of prostate cancer [17]. Other reports have not supported this view

Theories of viral infections, chemical carcinogens, occupation, urbanization etc have all been propounded in the past but have not been substantiated.

Occupation: Most of the patients affected in this environment are farmers. Some reports elsewhere have also implicated farming occupation.

Chemical carcinogens: Like in other malignancies, this has also been implicated in the genesis of prostate cancer.

CLINICAL FEATURES

Contrary to early presentation in developed countries with many cases now diagnosed at a time when the tumour is still localized, in our community, most of our patient still present with local or distant complications of the disease.

Features due to obstruction to free flow of urine

- *Inability to pass urine*. Most of our (84%) patients present with acute urinary retention while about 15% present with chronic retention.
- *Hesitancy*. This is initial delay to pass urine. Majority of the patients would observe that they spend longer time while passing urine than usual.
- *Urgency*. (reflex desire to pass urine) is experienced by many especially with associated bladder infection.
- *Urge Incontinence*. (Involuntary passage of urine). Result from sudden inability to hold urine when pressed.
- *Difficulties/straining to void urine*. Majority of the patients experiences some difficulties at micturition.
- *Poor flow* of urine is due to stenosis of the prostatic urethra.
- *Continuous dribbling of urine*
- *Intermittent flow of urine:* is a feature of bladder obstruction
- *Overflow incontinence* occurs in some of the patients with chronic retention.
- *Frequency*: Frequent passage of urine during the day may occasionally be noticeable.
- *Nocturia*. This is frequency at night. Frequent waking at night to pass urine is more noticeable by many patients because of disturbance of sleep.

Effect of prolonged obstruction:

- Hypertension
- Heart failure

- Renal failure

Organs' failure progressively leads to *leg and facial swelling* due to fluid retention.

Features of infection:

- *Cystitis / Urethritis*: low abdominal pain, fever, dysuria, and purulent urethral discharge
- *Prostatitis*: fever, deep perineal pain, difficulties in passing urine and faeces.
- *Retrograde epididymo-orchitis*: fever, testicular swelling and pain
- *Ascending pyelonephritis*: loin pain, fever, systemic symptoms
- *Bacteraemia / Septicaemia*: Fever, headache, malaise, insomnia, jaundice, nausea, anorexia, generalized body weakness/pain etc.

Features primarily due to the cancer:

Local effects

- Bleeding per urethra
- Protracted low back pain, deep perineal or pelvic bone pain.
- Progressive loss of libido (erectile dysfunction, diminished sexual interest and performance etc)
- Inability to pass faeces is seen occasionally in some of our patients due obstruction to the rectum by the tumour or temporarily by over distended bladder in some with acute urinary retention.
- Urinary incontinence: Could result from invasion of the urethral sphincter or the nerve controlling it. This may lead to progressive loss of normal ability to control passage of urine.
- Faecal incontinence ± Bed sores: Tumour invasion of the rectal sphincter leads to the loss of normal ability to control passage of faeces.

Systemic effects

- Generalized body weakness due to progressive anaemia and renal failure.
- Weight loss
- Non-specific systemic symptoms (anorexia, malaise, pyrexia, apathy etc)
- Generalized body swelling due to renal failure or heart failure

Features of distant metastasis

- Protracted bone pain from bony metastasis. In order, the lumber vertebrae, pelvis, femoral, cervical vertebrae and ribs are affected (table 4). In most cases, the lesions are osteosclerotic and in few cases it is osteolytic.
- Pathological fractures following extensive destruction of bone
- Sudden paralysis due to spinal cord involvement
- Sudden loss of consciousness from cerebral metastasis.
- Jaundice due to liver metastasis and occasionally due to septicaemia secondary to chronic cystitis from prolonged urinary stasis.
- Cough due to lung metastasis.
- Difficulties in breathing may follow development of pleural effusion.
- Abdominal swelling (ascites) from peritoneal seedlings.

INVESTIGATIONS

Tumor Markers

Prostate-specific Antigen (PSA): Is a glycoprotein produced by the prostatic epithelial cells. It is derived mainly from the prostate gland and serum PSA is usually elevated in prostatic pathologies especially those associated with enlargement of the gland including carcinoma of the prostate, benign prostatic hyperplasia and acute prostatitis [18]; hence it is tissue specific but not disease specific. Marked elevation in PSA is observed in metastatic diseases especially in bony metastasis. PSA density and PSA velocity correlate better with the progression of the disease. Normal PSA level is <4ng/ml. Serum levels greater than this may indicate possibility of prostate cancer, but values greater than 10ng/ml is more suggestive of the disease. Values between 4-10ng/ml may be suggestive of cancer if the PSA density is 0.15 or more.

Prostatic acid phosphatase: Nowadays, it is no longer used routinely. Acid phosphatase is not a specific marker because it is produced by most nucleated cells. Prostatic fraction which shows better correlation can be determined by treatment with tartaric acid which renders the prostatic fraction labile.

Prostatic Biopsy

Ultrasound guided biopsy of suspicious nodules improves the yield of positive biopsy.

? **Trans-rectal approach:** This is a clinic/bedside procedure most widely practiced in this country. Proximity of the gland to the rectum provides easy access to the gland via this approach. Major problem is the risk of introducing infection to the gland. When necessary, rectal washout should be carried out before the procedure.

? **Trans-urethral approach:** Is particularly useful in patients who present with obstructive complications, in which case the core tissue removed for biopsy can be therapeutic (improving urine flow) as well as diagnostic.

? **Trans-perineal approach:** Infective complication is minimal with this procedure and is favoured by many.

Imaging

? **Ultrasound:**

May reveal enlarged heterogenous gland with ation

distorted architecture, irregular outline, infiltration to surrounding tissues with or without calcification

- **Trans-abdominal approach:** Permits simultaneous scanning of the abdomen and the pelvis, but its accuracy in the assessment of prostate gland is less.
- **Trans-rectal approach:** Enhance better assessment of the prostate, the regional lymph nodes and the surrounding pelvic structures, which will assist in accurate staging of the disease.
- **Trans-urethral approach:** Provides good assessment because the probe lies directly over the gland. Major disadvantage is that few centers are well equipped for this.

? **Plain radiograph**

- **Chest radiograph:** Useful to confirm pulmonary metastasis and in the management of those complicated with pleural effusion.
- **Pelvic and lumbosacral x-ray:** Helps to determine metastasis to these bones which are common sites of bony metastasis. Prostate cancer is believed to produce growth factors that stimulate increase osteoblastic activities. Typical lesion produce in bone in most cases is osteosclerosis. In few cases it produces osteolysis.

? **Contrast studies**

- **Intravenous urography:** It is particularly very useful in urothelial malignancy and may be indicated in some patients with prolonged obstruction with features of lower urinary tract symptoms or those initially presenting with haematuria of unknown origin. Besides confirming features of obstruction, it also helps in assessing the functional status of the kidneys. It should be avoided in patients with history of allergy and those in renal failure.
- **Micturating cysto-urethrography:** Is useful in assessing bladder outlet obstruction particularly in those presenting only with features of lower urinary tract symptoms and those presenting with bladder mass.
- **Lymphangiography:** May be necessary to determine extent of lymphatic permeation and in patients being considered for curative therapy.

? **Other Imaging techniques:**

The following are useful but are either not locally available or the cost are not affordable to our patients.

- **Computerized Tomography scan:** Gives better image and help in staging the tumour more accurately.
- **Magnetic Resonance Imaging:** Gives better resolution.
- **Radio-isotope scan:** Is particularly useful in detecting distant/bony metastasis particularly in patients being contemplated for radical prostatectomy.

Renal Function Tests

? **Electrolytes, Urea & Creatinine measurement:** Prolonged obstruction will leads to progressive renal failure with derangement of the electrolytes. Many patients (table 3) present in chronic renal failure.

? **Full Urinalysis:** Albumin, red blood cell and epithelial casts can also be seen in the urine.

Haematological Tests:

? **Blood grouping and cross-matching:** A good number of patients present with anaemia, with or without haematuria, who may therefore requires blood transfusion. Beside, the effect of androgen ablation on the bone marrow will aggravate anaemia.

? **Bone Marrow Aspiration:** This is useful because marrow infiltration by tumour can partly contribute to the anaemia and the bleeding tendency in these patients.

? **Liver function test:** This is particularly useful in patients presenting with jaundice or other evidence of hepatic involvement like gross malnutrition, ascites and palpable hepatic nodules.

Endoscopy

? **Urethrocystoscopy:** Helps to visualize the prostate gland and the posterior urethral, and to assess the degree of bladder involvement in this disease. In patients with obstructive symptoms, it can be combined with minimal resection of the gland to provide specimens for biopsy and relief of the obstruction.

? **Proctoscopy:** May be indicated occasionally.

Others:

? **Urine microscopy culture and sensitivity:** Prolonged stasis leads to urinary tract infection

? **Full Blood Counts:** The packed cell volume, total and differential white blood cell count, platelets counts *et cetera* are necessary to determine the level of anaemia and systemic infection.

STAGING

The most commonly used staging systems for prostate cancer are the Whitmore-Jewett and the TNM classifications [19].

Stages 1-4 of Whitmore-Jewett are similar to T_1-T_4 of the TNM

Tx Primary tumour cannot be aassessed

T_0 There is no evidence of primary tumour

T_1 Non-palpable tumour, tumour within normal gland

T_2 Palpable tumour still localized within the gland
T_3 Extension of tumour beyond the capsule but tumour is less than 6cm
T_4 Tumour invades the adjacent structure or is fixed.

N_x Regional lymph nodes cannot be assessed.
N_o No evidence of nodal metastasis
N_1 Solitary nodal involvement less than 2cm
N_2 Involvement of one or more lymph nodes greater than 2cm but less than 5cm
N_3 Regional nodal involvement greater than 5cm

M_x Distant metastasis cannot be ascertained
M_o No evidence of distant metastasis
M_1 Evidence of distant metastasis

TREATMENT

In clinically localized disease, treatment is aimed at eradicating the tumour, but in advanced stages, when the disease is no longer confined to the primary site, the aim of treatment is to prevent further growth of the tumour and thereby improve the quality of life and possibly increase survival. As highlighted above, most of the patients with prostate cancer in this environment present late with stages 3 and 4 diseases, often when complications have set in. Therefore, most of these patients usually require one form of resuscitation or the other before tackling the underlying pathology.

TREATMENT MODALITIES AND THEIR RELATIVE ADVANTAGES

Surgery

? Complete removal of the diseased gland offers the best hope of cure.
? Removal of the testis (surgical castration) is useful in controlling advanced disease.

Hormonal therapy

? Anti-androgens, oestrogens, 5?-hdroxylase inhibitors, and LHRH agonists are all useful in advanced disease.

Chemotherapy

? Useful in poorly differentiated prostate cancers

Radiotherapy

? It is curative as well as palliative.
? Is useful for control of pain and distant metastasis.
? Useful for inoperable tumours and those that decline surgery.
? For patients with recurrence following radical prostatectomy.

A Resuscitation:

In our locality many of our patients will require initial resuscitation to:

1. Relieve acute or chronic urinary retention with urethral catheterization. If this is not possible, suprapubic cystostomy can be performed
2. Control urinary tract infection by sensitive antibiotic based on the urine or urethral swab sensitivity result. A potent urinary antiseptic can be used empirically while awaiting the sensitivity result.
3. Correct anaemia with blood transfusion
4. Haematuria can be controlled with platelets concentrate or transfusion with fresh blood. Underlying infection should also be treated for better control.
5. Renal failure may require initial haemodialysis to stabilize patient. In diuretic phase this may not be strongly indicated.

B Definitive treatment

This comprises of curative treatment for early tumours localized to the organ and palliative treatment for advanced diseases.

CURATIVE TREATMENT

1. **RADICAL PROSTATECTOMY:**

Radical prostatectomy is the treatment of choice in localized prostate cancer. It entails removal of the entire gland, the capsule, the seminal vesicle and the surrounding fibro-fatty tissue. It offers curative treatment before the tumour escapes outside the gland and provides disease-free survival comparable to the life expectancy of similarly aged, healthy men.

Indication for radical prostatectomy:

i. Investigations, including biopsy, confirmed localized tumour (stage T_1-T_2) without extension beyond the capsule or fixation to the surrounding structures. Radical prostatectomy should be reserved for those that are likely to be cured of the disease.
ii. Patient should be willing to undergo surgery after discussion of treatment options, risks, and quality of life.
iii. Patient should be free of concurrent life-threatening medical diseases.
iv. The patient should have at least 10-15 year life expectancy. The procedure is best reserved for those that will live long enough to benefit from the cure.

Approaches:

? Radical perineal prostatectomy:
Advantages: Produces lesser pain and more rapid postoperative return of bowel function, appetite, and normal activity, with the overall advantage of a lesser duration of hospital stay.
? Radical retropubic prostatectomy:

? Laparoscopic radical prostatectomy: Has no advantage over perineal radical prostatectomy but is valuable in patients who have undergone prior low abdominal or pelvic surgery, especially if a mesh has been used.

Postoperative Adjuvant Therapy
Hormonal therapy can be instituted if there is evidence of disease progression post radical prostatectomy.
Postoperative Adjuvant Radiation Therapy: is not necessary.

1. RADIOTHERAPY

Radiotherapy can be delivered by external beam irradiation or by brachytherapy. Radiotherapy is curative and has equal superiority with radical prostatectomy for localized disease, but better results are achieved when it is combined with hormone control.

Major side-effects;
Post-irradiation complications to the bladder, rectum, erectile tissue of the penis and the neurovascular bundle are the major concern.

External beam Irradiation Dose: 6700-7200 cGy when external radiation is used alone.

Brachytherapy: radioactive elements can be placed near the tumour. Common isotopes in use include iodine 125, Iridium 192 and palladium 103. At tumouricidal doses Iodine and palladium produce effective low energy x-ray emission (27 and 21keV respectively), while Iridium is useful for high dose brachytherapy with emission of gamma radiation at 400 keV.

Brachytherapy with External Irradiation: Useful for advanced tumours. 4500 cGy external beam RT is combined with brachytherapy.

Conformal radiation therapy: This new three-dimensional RT techniques permits delivery of high dose of irradiation to the prostate and lower the dose of irradiation to the normal tissue of the anterior rectal wall, bladder neck, prostatic urethra and the femoral heads and thereby reduces irradiation injury to these tissue.

PALLIATIVE TREATMENT

Palliative treatment is carried out for advanced tumours i.e. stage 3 (locally advanced) and stage 4 (metastatic) tumours because presently there is no reliable adjuvant therapy capable of eradicating extra-prostatic disease.

Palliative treatment can commence with androgen withdrawal, advancing later to anti-androgens and then to second-line endocrine manipulations i.e commence with withdrawal of antiandrogens or introduction of diethylstilbestrol or aminoglutethimide or ketoconazole or corticosteroids before finally introducing chemotherapy. Withdrawal of antiandrogens, both steroidal and nonsteroidal, has been shown to result in clinical responses.

2. HORMONAL TREATMENT

Although available evidence suggests that most tumours contain hormone-dependent and hormone-independent populations of cells which imply that the cure of prostate cancer by endocrine management alone is unlikely. The rationale for hormonal management is based on the fact that 70% of prostate cancers are, at least initially, hormone-dependent.

Castration
This is the "gold standard" of endocrine management of advanced prostate cancer

a. Surgical castration
Bilateral orchidectomy (total or sub-capsular): Local experience indicates that both methods are acceptable to Nigerians with prostate cancer, although a few may show initial objections, but the financial implication of other types of medical castration makes this form of treatment more attractive to them. Within 3-4 hours postoperatively, androgen level drops to castration level.

b. Medical castration:
Oestrogens: Synthetic oestrogen, diethylstilboesterol (DES), effectively blocks androgen release. Castration levels are often attained within 21 to 60 (mean 38.3) days. Its use has been largely limited by cardiovascular side effects. It is safe at low doses of 1-3mg per DES.

Luteinizing hormonereleasing hormone (LH-RH) Agonist and antagonist

a. **Agonist:**
LH-RH agonists have become standard forms of treatment for prostate cancer. They suppress plasma testosterone to castration levels after initial stimulation.
Available monthly depots include goserelin 3.6 mg, buserelin 3.6 mg; leuprorelin 3.75 mg, and triptorelin 3.75 mg.
Treatment is associated with initial worsening of symptom (flare reaction) which can be controlled with addition of anti-androgens at the commencement of treatment.

b. **Antagonist:**
LH-RH antagonists lack the initial surge of plasma testosterone, responsible for the "flare reaction". Its clinical application was delayed because of the

relatively high dosages required and the allergic reactions at the injection site.

Androgen blockade:
Anti-androgens competitively bind with androgen receptor at the target cells.

a. **Steroidal anti-androgens:**
Cyproterone acetate: In monotherapy, the dose is 100 mg 2-3 times a day.

b. **Pure anti-androgens:**
Flutamide: In monotherapy, it is given 250mg thrice times a day orally. It is cheaper than the other forms of antiandrogen and it is more readily available locally.
Bicalutamide: Is now locally available and gaining popularity. Its advantages include better compliance with daily single dose of 50mg/d per oral. Unfortunately the high cost (about N 1,300 per tab) limits its use.
Nilutamide: Is not recommended for use alone.

5α-Reductase inhibition
Finasteride is useful but has weak activity in prostate cancer [20]. Dosage: 5-10 mg per day.

Maximal androgen blockade (MAB):
MAB is achieved by combining treatment that excludes testicular androgen production (castration or LH-RH agonist or estrogen treatment) with treatment that exclude adrenal androgens (antiandrogen) for patients with metastatic or locally advanced disease. It produces a more pronounced and faster response on symptoms and markers (PSA). However, it does not produce longer survival when compared with castration or use of an LH-RH agonist alone, except when the choice of anti-androgen is flutamide or nilutamide. It can be used in selected patients especially in the initial treatment with LHRH agonist.

2. RADIOTHERAPY:

Radiation treatment for palliation is useful for pain control of bone metastasis and following recurrence after radical prostatectomy and where tumour is inoperable or when patient is unfit for surgery (See treatment of complications below).

3. CHEMOTHERAPY

Chemotherapy is mainly useful for hormone resistant tumours. Generally, response with the use of cytotoxic agents is not encouraging because most of the agents used in monotherapy have not demonstrated significant activity against the tumour. In combination therapy some of these agents have demonstrated moderate to significant activities. Cyclophosphamide is the only single-agent which has demonstrated modest anti-tumour activity in just 10-20% of patients.

Docetaxel (taxotere) is useful for hormone resistant prostate cancer. This drug is now locally available and can be used for patients that fail to respond to castration or those that became refractory to treatment after initial response.
Doxorubicin, fluorouracil, and cisplatin have also demonstrated modest single-agent benefits in hormone-resistant prostate cancer.

Others drugs with little beneficial effects include Estramustine phosphate, Streptozocin, and mitoxantrone which is often combined with prednisolone

4. IMMUNOTHERAPY

Cancer vaccines are strategies designed to improve tumour antigen presentation to the host immune system. They may play a bigger role in the future.

TREATMENT OF COMPLICATIONS:

Bleeding disorders:
Patients should be admitted and initially placed on intravenous fluid with saline while awaiting patient specific **fresh** blood transfusion. Immediate hormonal treatment is instituted if patient has not been on therapy. Those that have been on treatment may require review of the regimen.

Bilateral Ureteric obstruction
This requires urinary diversion. Pyelostomy or nephrostomy may initially be carried out pending definitive treatment. Bladder outlet obstruction is more readily treated with urethral cauterization or supra-pubic diversion as mentioned earlier.

Pulmonary metastasis with pleural effusion:
Patient should be admitted and have a closed chest tube with under-water seal inserted. Hormonal control is then commenced.

Bone Metastasis can be treated with:
Radiotherapy: A single (800 cGy) regimen is as effective as the divided regimens. The main side effect is the associated increased acute morbidity, particularly to the abdominal organs.

Pathologic fracture: Surgical fixation is required if pathologic fracture occur in a weight-bearing bone. Radiotherapy will further assist in pain control and promotion of healing.

Paraplegia or paraparesis due to spinal cord

compression can be treated with:

- **Radiotherapy**
- **Steroid:** Dexamethasone (Decadron) is 16 to 100 mg intravenous stat, followed by a maintenance dosage of 4 to 24 mg every 6 hours for 2-3weeks.
  We have used ketoconazole in some patients with paraparesis with positive results in some patients and no response in others. Its usefulness is believed to be due to effect of steroid.
  Surgical decompression
- **Systemic radionuclide therapy**

PREVENTION OF PROSTATE CANCER

Diet

- Low animal protein may be protective due to increase risk of prostate cancer associated with increased intake of animal protein.
- Increase plant protein is believed to confer protective effects.
- Vitamin D is believed to have an inhibitory effect on prostate cancer growth (vit D)[11, 12]
- Avoid too much fatty diet especially saturated fats and omega-6 fatty acids.
- Increase diet rich in cooked tomato: Tomatoes is rich in lycopene which has been shown to reduce the risk of prostate cancer. Increased consumption of diet rich in *cooked tomato* may therefore be beneficial.

Chemoprevention:

- **5α-Reductase inhibition (Finasteride):** It has a place in the treatment of prostate cancer, but its use as chemoprophylaxis has not been established. Potential problem with its use is the fact that inhibition of 5α-reductase will lead to increases in prostatic testosterone which may promote the growth of latent cancer in aged men [20]. Its use in chemoprevention of prostate cancer is still under study.

- **Retinoic acid:** In intake have been proven to reduce the risk of prostate cancer[21]

Life style:

Maintain health friendly social life style

- Avoid smoking[15, 16]
- Avoid alcohol
- Eat balance diet.
- Avoid indiscriminate use of drugs particularly androgens containing tablets to achieve strong erection.
- Use of herbal tea: Green tea has been reported to useful in the prevention of prostate cancer [22, 23]. This may account for low incidence in the Asian countries.

Physical protection:

Prevent exposure to irradiation which may occur:

- in areas with nuclear plant disaster
- during radiotherapy for any reason
- Those domiciled under high tension wire

Screening:

Screen men potentially at risk of prostate cancer with rectal examination and prostate specific antigens (DRE and PSA). This includes:

- Those with family history
- Elderly patients above 45yrs
- Male patients who have suffered from any form of malignancy.

Early detection and treatment of those affected

Cancer of prostate is curable in the early stages.

TABLES 1-4 SHOW OUR LOCAL EXPERIENCE AT ILE-IFE

TABLE 1: PRESENTING SYMPTOMS IN ORDER OF FREQUENCY AT ILE-IFE

SYMPTOMS	FREQUENCY
Urinary frequency	+++++
Difficulties of micturition	++++
Low abdominal pain	+++
Urgency	+++
Features of anaemia	++
Weight loss	++
Hesitancy	++
Haematuria	++
Dysuria	++
Gen. body weakness	++
Leg swelling	++
Nocturia	++
Fever	+
Abdominal swelling	+
Feeling of incomplete bladder emptying	+
Difficulties in breathing	+

TABLE 2: CLINICAL SIGNS IN ORDER OF FREQUENCY AT ILE-IFE

SIGNS	FREQUENCY
Hard, nodular/irregular prostate	+++
Pallor	++
Cachexia	++
Pedal oedema	++
Ascites	+
Respiratory distress	+
Hepatomegaly	+
Hard suprapubic mass	+
Jaundice	+

TABLE 3: COMPLICATIONS IN ORDER OF FREQUENCY AT ILE-IFE

COMPLICATIONS	FREQUENCY
Urinary retention	+++++
Rectal metastasis	+++
Hypertension	+++
Urinary tract infection	+++
Cachesia	+++
Abdominal metastasis with ascites	+++
Renal failure	+++
Haematuria	++
Pulmonary metastasis	++
Paraplegia	++
External abdominal herniae (mostly inguinal)	++
Faecal incontinence	+
Urinary Incontinence	+
Paraparesis	+
Pathological fracture	+
Intestinal obstruction	+
Bladder calculus	+

TABLE 4: SITES OF METASTASIS IN ORDER OF FREQUENCY AT ILE-IFE

SITES	FREQUENCY
Lumbosacral vertebrae	++++
Pulmonary metastasis	+++
Pelvic	+++
Bladder	++
Long bones	++
Cerebral	+
Liver	+
Cervical vertebrae	+
Orbit	+
Ureter	+
Rectum	+
Ribs	+
Abdomen	+
Cervical nodes	+
Kidney	+

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