



UNIVERSITY OF LAGOS, NIGERIA

Inaugural Lecture Series 2015

TOPIC:

CANCER: THE UNWANTED GUEST
THAT MAY VISIT

By
PROFESSOR ADEREMI TAJUDEEN AJEKIGBE

CANCER: THE UNWANTED GUEST THAT MAY VISIT

An Inaugural Lecture Delivered at the University of Lagos
Main Auditorium on Wednesday 21st January, 2015

By

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**COLLEGE OF MEDICINE
UNIVERSITY OF LAGOS**

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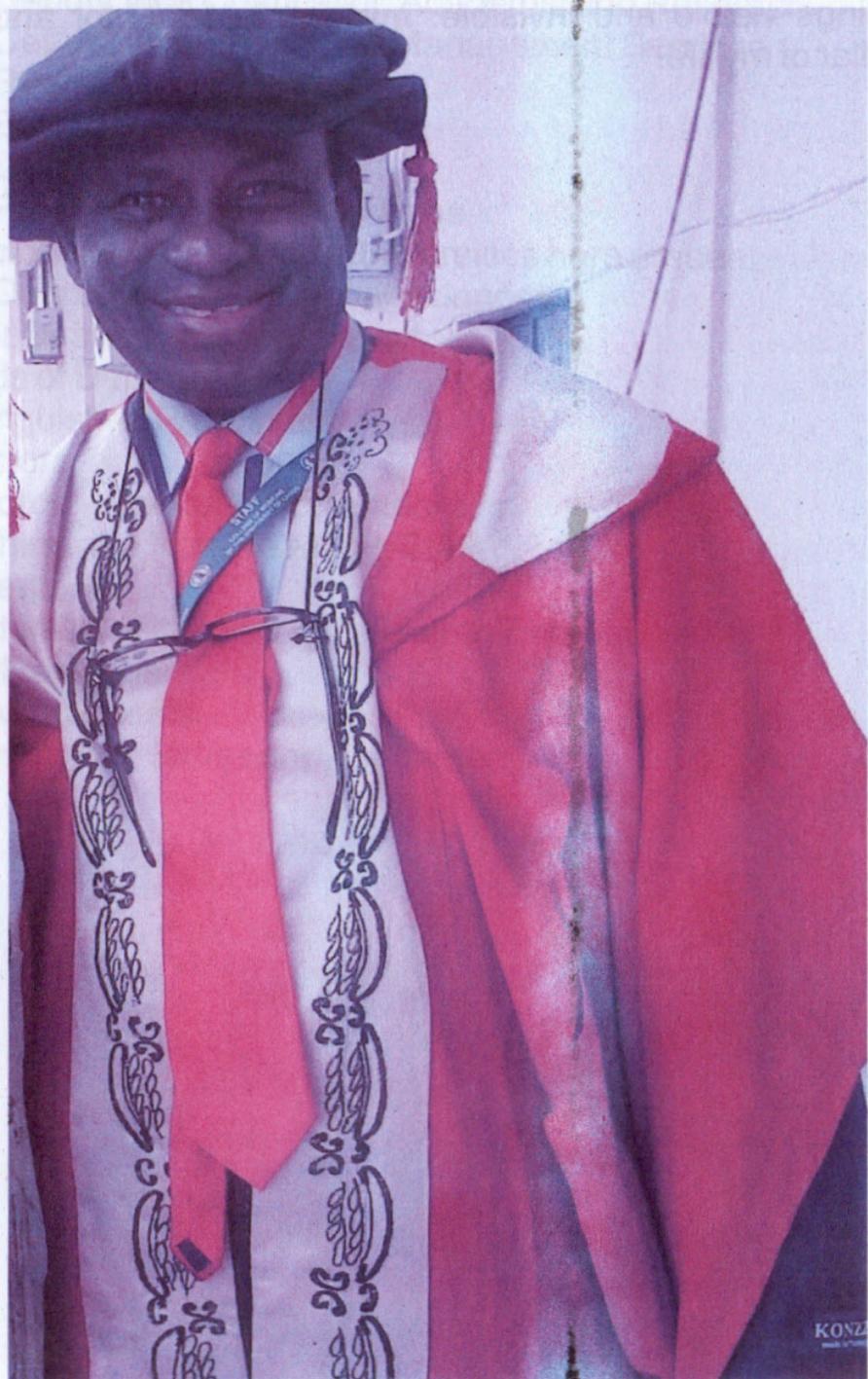
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KONZA

Dedication

The lecture is dedicated to God Almighty, the Creator of all things visible and invisible: my greatest mentor and the pillar of my life.

PROTOCOL

The Vice Chancellor

The Deputy Vice Chancellor; Academic and Research

The Deputy Vice Chancellor Management Services

The Registrar

The Bursar

The Librarian

The Provost, College of Medicine

Principal Officers of other Universities here present

The Dean, Faculty of Clinical Sciences

Other Deans here present

Heads of Departments

Distinguished Professors

Directors

My Lords – Spiritual and Temporal

Teaching and Non-Teaching Staff

Students

Gentlemen of the print and electronic media

Family members

All invited guests

Distinguished ladies and gentlemen.

CANCER: THE DEFINITION, EXPLANATION; INTRODUCTION, BRIEF HISTORY; EPIDEMIOLOGY AND PATHOPHYSIOLOGY.

DEFINITION: Abnormal and uncontrolled GROWTH that persists even after the stimulus that initiated it has been removed.

EXPLANATION: The Brick; the Block and the Cell.

BRIEF HISTORY:

Cancer is known as

- o **JEJERE** in Yoruba
- o **CHIWO DAJI** in Hausa
- o **UTO-ALAGHI-ALA**
- o **IBI-ALAGHI-ALA**
- o **ONYA-ALAGHI-ALA**
- o **OBIRI-NA-AJA**
- o **OYA-TURU-AHU** in Igbo language

I believe all these are descriptive words to describe how cancer eats up its victims without shedding crocodile tears. It has been present since time immemorial, before man himself evolved. Sarcomas have been seen in the bones of dinosaurs and of our predecessor **PITHECANTHROPUS – ERECTUS**.

It was first recognised by **HIPPOCRATES (C460 – 370BC)** and named by **GALEN OF PERGAMON (AD 129 – 2161.)**

It is represented by the crab because of its ability to move in any direction.

It is an increasingly common problem. By 2030s onwards, it is likely that one in two of the global

It gives me immense pleasure to welcome you to the 21st Inaugural lecture of the University of Lagos; the 2nd from the department of Radiation Biology; Radiotherapy; Radiodiagnosis and Radiography (RBRRR) of the College of Medicine, University of Lagos and the FIRST by a Professor of Radiotherapy and Clinical Oncology in Nigeria and throughout the length and breadth of West Africa.

I wholeheartedly welcome you to this lecture which discusses a topic that concerns every living being, particularly MAN. It is a lecture that focuses on a frightening word: CANCER. An ordinary six-letter word, the diagnosis of which sends shivers down the spine.

Today's inaugural lecture, titled: CANCER, THE UNWANTED GUEST THAT MAY VISIT, is structured in to eight sections viz:

1. Cancer: the definition, explanation, introduction, brief history, epidemiology and pathophysiology.
2. The causes and aetiological factors of cancer
3. Symptomatology or what to look-out for
4. Trends in the management of cancer following affirmative diagnosis
5. Preventive measures and early detection
6. Processes of dying from cancer
7. Conclusion
8. Recommendations
9. Acknowledgement
10. References

population will develop the disease at some point mainly due to an increasingly ageing population.

The treatment of cancer is therefore a vital component of modern health care provision.

THE HUMAN BODY: There are about 10^{13} cells in the human body. From the fertilised egg to death in old age, a human being is the product of 10^{16} cell divisions.

Like all complex system, growth control can go wrong, resulting in the loss of normal territorial restraint, producing a family of cells that can multiply indefinitely (Cancer). But it is not just the local growth of tumour cells that makes them so lethal. It is their ability to spread directly through invasion and by metastases to other sites of the body. It is this spread that begins the plethora of clinical problems. Just as no two individuals are exactly the same, we can only make some broad generalisations from clinical experience.

EPIDEMIOLOGY

The global incidence of cancer is SOARING due to rapidly ageing populations in most countries. In the 2020s there will be 20 million new cancer patients each year. 75% of them will live in countries that between them will have less than 5% of the resources to control the disease.

The world is presently in a health transition. Infection as a major cause of suffering and death is giving way to new epidemics of non-communicable disorder such as cardiovascular diseases, diabetes and cancer. There is globalisation of unhealthy life styles.

PATHOPHYSIOLOGY OF THE BREAST

CANCER: Studies of cell kinetics suggest that if a single cancer cell continually divides, it will take 30 doublings to become 1cm in size. At this stage, 20% of patients will have metastases; tumour doubling time range from 23 to 209 days.

From molecular biology, cancer is now recognised as a genetic disease where mutations in genes, inherited or acquired, result in the transition from a normal to a malignant growth pattern.

CANCER INCIDENCE IN NIGERIA AT PRESENT

There are about two million cancer cases recorded in Nigeria at present with over 100,000 new cases recorded annually.

Out of this number, 10% or about 200,000 have access to hospitals with Radiotherapy facilities. About 5% of this number, i.e. 10,000, have resources to go abroad where they pay between \$10,000 - \$15,000 per patient for a 3-5 week course of radiotherapy which translates to about \$100,000,000 (one hundred million dollars) per annum of foreign exchange drain. The cost of Chemotherapy is about 5-10 times more than the cost of radiotherapy.

About 27% of the 2 million cases are breast cancer while about 25% are cancer of the cervix.

THE CAUSES AND AETIOLOGICAL FACTORS OF CANCER

Cause \longrightarrow UNKNOWN \longrightarrow G.O.K

AETIOLOGICAL FACTORS

1. GENETIC FACTOR

- a. Chromosomal abnormalities have been linked with virtually all CHILDHOOD TUMOURS e.g Leukaemias and Nephroblastoma.
- b. Familial Predisposition
 - i. Ca Breast
 - ii. Ca Prostate
 - iii. Colorectal Ca.

2. ENVIRONMENTAL FACTORS

The totality of the environment from environmental pollution to microbes e.g. industrial wastes, polycyclic hydrocarbons, parasites, U.V. rays of the sun, etc.

3. VIRAL FACTOR

- a. E.g. Epstein Barr Virus in Burkitts' Lymphoma and Head and Neck cancers.
- b. Human Papilloma Virus (HPV types 16 & 18) in cancer of the cervix and Head and Neck cancers.
- c. Herpes simplex virus in cervical cancer and Head and Neck cancer.

4. OCCUPATIONAL FACTORS

- a. Adenocarcinoma of the nose and paranasal sinuses in furniture makers
- b. Asbestos Exposure
 - i. Cancer of the Larynx
 - ii. Cancer of the bladder and
 - iii. Mesothelioma (Cancer of the membrane covering the lungs).
- c. Aniline Dye in Textile Industries and Bladder Cancer
- d. Nickel Refining and Squamous cell carcinoma of the nose and paranasal sinuses.
- e. Tyre Vulcanizing and cancer of the Larynx.
- f. Wood-dust, Leather works and Ca sinuses.

g. Commercial sex occupation and cancer of the cervix.

5. SOCIO-ECONOMIC FACTORS

i. Poor social-economic status and Ca Cervix viz: -

a. Early sex

b. Early Marriage

c. Early pregnancy

d. Early first child

e. Good Socio-economic status and Ca endometrium

f. Fat or High cholesterol intake and Ca breast.

6. SOCIAL FACTORS

a. Cigarette—smoking and Ca Cervix, Ca Lung and cancers of the head and neck etc.

b. Alcohol—intake and Head and Neck cancer and Ca, Liver etc.

c. Betel-chewing and oral cancer

d. 1st Coitus at an early age: 42% of patients with Ca Cervix have had first sexual experience between the age of 17 years.

e. Multiple sexual partners e.g. Prostitution (5times higher chances of Ca Cervix). Multiple sexual partners can also lead to cancer of the penis.

7. RACIAL FACTORS

> Ca Cervix (Incidence very low among Jews)

? Fidelity

> Ca Penis (Incidence very low among Jews and in Nigeria).

? Early Circumcision

> Nasopharyngeal Ca (High Incidence in S/East China).

> Ca breast (Incidence low among Japanese)

? Reason: Racial

- > Colorectal Ca (Relatively low among blacks in Africa until recently)
? change in diet from fibre-filled diet to western diets.

8. DEITARY FACTORS

- > High cholesterol and fat intake → Increased risk of Ca breast.
- > High intake of fibre → Reduced risk of colorectal Ca.
- > Higher risk of colorectal Ca with high intake of protein, saturated fatty acids and alcohol.
- > Lower risk of colorectal Ca with higher intake of dietary fibre, fruits and vegetables.
- > Smoked salted fish and Ca Nasopharynx.

9. ENDOCRINE / HORMONAL FACTORS

i. Exposure to oestrogen

a. Age at Menarche

b. Age at Menopause

c. Age at first pregnancy



Oestrogen Window

- > Relationship between age at menarche and first pregnancy.
- > Women with menarche before the age of 12, have a 2-fold higher incidence of breast cancer than women with menarche occurring after the age of 13.
- > Nulliparous women have a higher incidence of breast cancer than women who have had deliveries and have breast-fed i.e. failure to breast-feed increase the risk of breast cancer.
- > Obesity in post-menopausal women increases the chances of breast cancer.
- > XRAM (X-ray induced artificial menopause) before the age of 35 years protects against Ca Breast.

- > Menopause at over 55 years increases chances of Ca Breast.

10. **EXPOSURE TO IONIZING RADIATION**

- > Ca in early radiologists.
- > Radiotherapy in mastitis in the past.
- > Accidental exposure to radiation as in Chernobyl nuclear reactor accident in Russia.
- > Atomic Bomb explosion in Hiroshima and Nagasaki during the 2nd World War.

11. **ORAL AND NON-ORAL CONTRACEPTIVES:**

- > The use of oral contraceptive for up to seven (7) years before the 1st full term pregnancy increases the chances of breast cancer.
- > Oral and non-oral contraceptives could give a false sense of protection from unwanted pregnancy to a lady thus making her throw caution to the wind and engage in uncontrolled sexual activities with multiple partners that may lead to cancer of the cervix.

12. **TIGHT UNDERWEARS (PANTS) IN MEN (TRAUMA)**

13. **THE INVISIBLE EVIL ARROW**

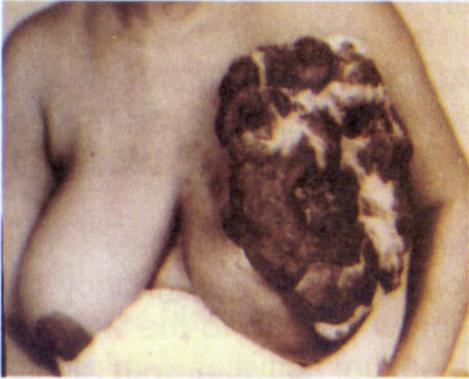
14. **ANTHROPOMETRIC PARAMETERS:** are also risk factors for breast cancer. There is a significant association between the WAIST and HIP ratio and the risk of breast cancer among post menopausal women. NO association in premenopausal women.

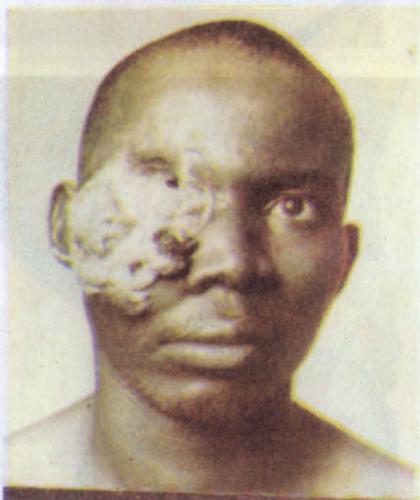
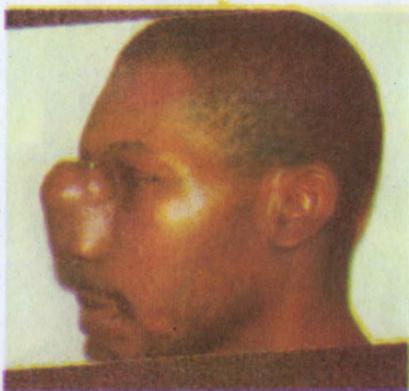
15. **HEREDITARY CANCER SYNDROME:** (Breast)  BRCA 1 and BRCA 2 mutations, CDH1 mutations are associated with a life – time breast

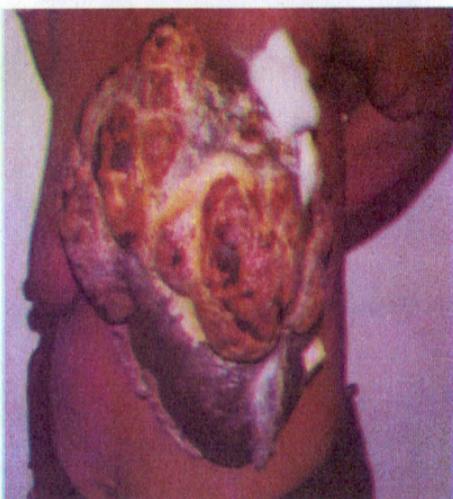
cancer risk of about 40% (Angelina Jolly and Fiona) as well as diffuse GASTRIC carcinoma.

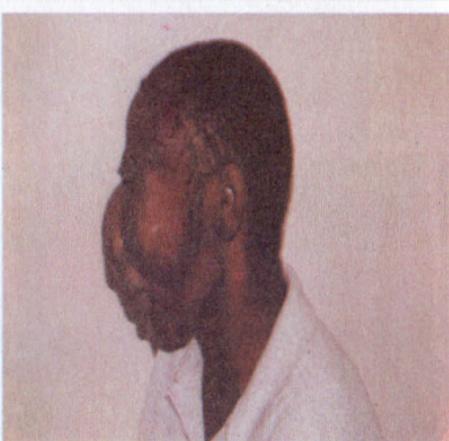
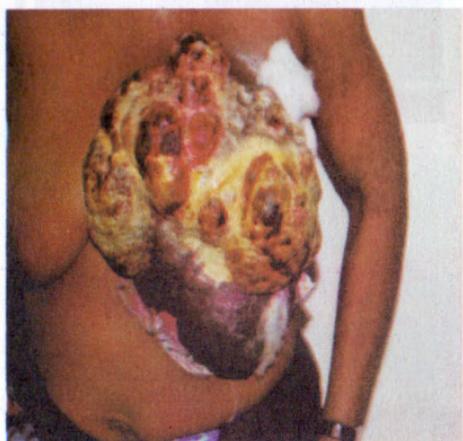
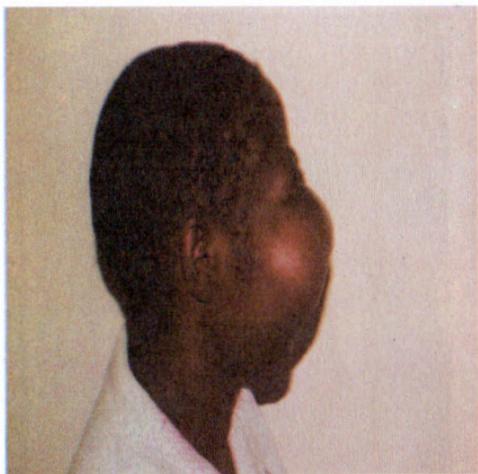
The life time risk of breast cancer for individuals affected with Peutz-Jagher's syndrome is 45%.

SYMPTOMATOLOGY OR SIGNS OF CANCER (WHAT TO LOOK OUT FOR)

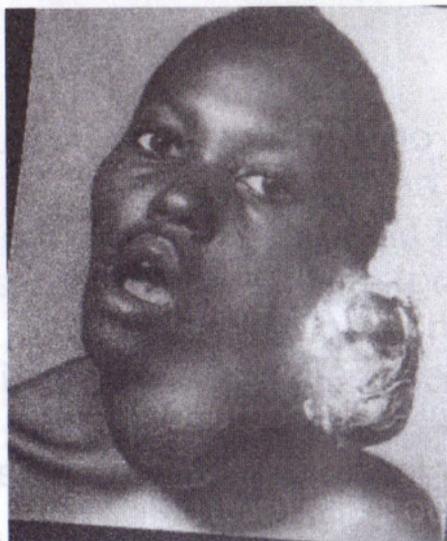
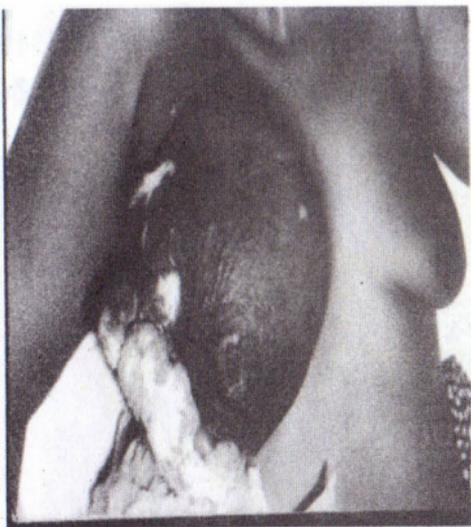


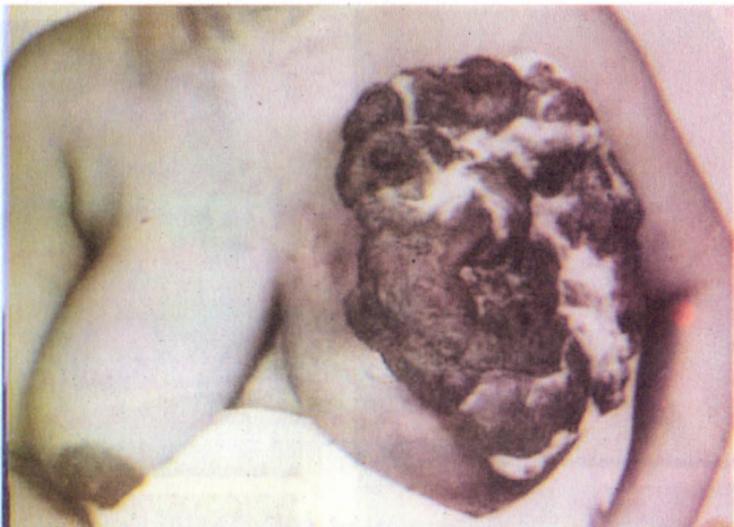






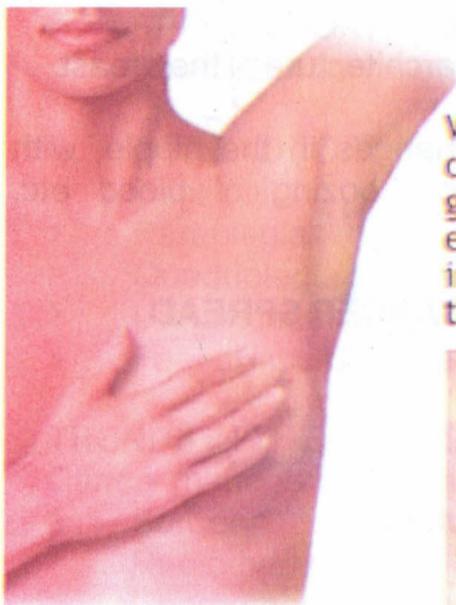






1. Any persistent lump or thickening in tissue – especially the breast, lip or tongue.
2. Any irregular bleeding or blood-tinged discharge from any body orifice (opening), e.g. the vagina the anus, the nostrils, the mouth, the nipples etc.
3. Any sore that does not heal, especially if located in the mouth, tongue or lip.
4. Persistent indigestion or loss of appetite especially in people over 40 years of age.
5. Sudden or rapid change in the form, appearance or rate of growth of a mole or a wart. (Getting bigger, painful or bleeding).
6. Persistent change from normal in-bowel habit.
7. Persistent hoarseness, cough, soreness of throat or difficulty in swallowing.
8. A painless dark patch on the sole of the foot (or in any other part of the body).
9. Waking up several times to urinate at night especially in men above 50 years or difficulty in passing urine.
10. UNINTENTIONAL weight loss.

SYMPTOMATOLOGY SPECIFIC TO BREAST AND FROM METASTASES



With fingertips close together, gently probe each breast in one of these three patterns



Breast self-exam:
Manual inspection
(standing)

ADAM



Circles



Wedges



Lines

1. PAINLESS lump in the breast.
2. Discharge from the nipple (bloody or not).
3. Lump/swelling/mass in the axilla (arm pit).
4. Skin changes in the breast.
5. Changes in the contour or architecture of the breast.
6. Nipple retraction.
7. History of eczematous changes in the nipple, with itching, burning sensation, oozing of blood etc. Pagets' disease.

SYMPTOMATOLOGY FROM CANCER SPREAD

A. TO THE LUNGS

- > Cough
- > Chest pain
- > Haemoptysis (blood in sputum)
- > Breathlessness

B. TO THE BONES

- > Severe bone pain
- > Change in gait
- > Inability to walk etc.

C. FROM SPREAD TO THE BRAIN

- > Headache
- > Confusion
- > Slurred speech
- > Loss of memory
- > Dizziness
- > Vomiting
- > Diplopia
- > Loss of consciousness
- > Death

D. SPREAD TO THE LIVER

- > Jaundice

- > Hepatomegaly
- > Pain in the Right hypochondrium etc.

A. SPREAD TO THE KIDNEY

- > Renal shut down, etc

B. SPREAD TO THE SPINAL CORD

- > Back pain
- > Paraplegia
- > Quadriplegia
- > Urinary incontinence
- > Faecal incontinence

TRENDS IN THE MANAGEMENT OF CANCER

Cancer management is multi-disciplinary and it includes:

- > Surgery
- > Radiotherapy
- > Chemotherapy
- > Hormonal Therapy
- > Biological Therapy
- > Immunotherapy
- > Thermal Ablation Therapy
- > Anti – angiogenic Therapy
- > Gene Therapy
- > Pain Control
- > HOSPICE – CARE

SURGERY WITH THE BREAST AS A CASE STUDY

- Biopsy
 - FNAC (Fine needle Aspiration Cytology) or FNAB (Fine needle Aspiration Biopsy) or any other Biopsy.
 - Lumpectomy
 - Simple Mastectomy
 - Segmental mastectomy or Quadrantectomy
 - Radical Mastectomy
 - Toilet Mastectomy

+ Axillary Dissection.

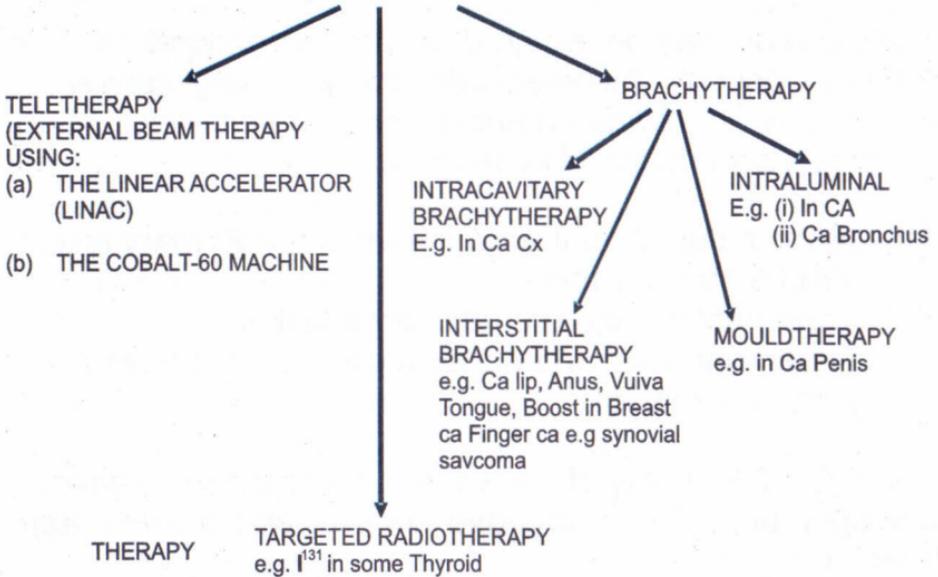
Surgery is majorly a local treatment and cancer is NOT a local disease.

RADIOTHERAPY OR RADIATION THERAPY

This is the use of high energy rays to damage or kill cancer cells by preventing them from growing and dividing.

- It can be externally (Teletherapy) or internally (Brachytherapy) delivered.
- Radiation can be used to CURE or CONTROL cancer or as a PALLIATIVE i.e. ease some of the symptoms caused by cancer.
- It is a loco-regional treatment.

RADIOTHERAPY



Clinical radiation therapy as a medical discipline begun at the International Congress of Oncology in Paris in 1922 when COUTARD and HAUTANT presented evidence that advanced laryngeal cancer could be cured without disastrous treatment-induced sequelae. By 1934, COUTARD had developed a protracted fractionation scheme that remains the basis for current radiation therapy.

Not less than 60% of cancer patients undergo Radiotherapy at a point in the treatment of their disease either by Teletherapy or Brachytherapy in the USA. But surgery is the oldest form of cancer therapy. The

management of most malignancies depend on the stage of the disease (how advanced by spread, the disease is).

The surgeon may be required to carry out procedures like mediastinoscopy and mediastinotomy in lung cancer or laparotomy in ovarian cancer for example to confirm diagnosis through tissue acquisition.

Treatment in cancer is the treatment of the Primary lesion and that of metastatic foci.

- Treatment could be curative or palliative.
- Treatment is also individualised to meet the needs of a particular patient.

Improving the quality of life is the main objective in cancer management; also to improve survival and disease-free interval.

RADIOTHERAPY: The aim is to deliver a precisely measured dose of radiation to a defined tumour volume with as minimal damage as possible to surrounding healthy tissue.

This results in:

- i. Eradication of the tumour
- ii. A high quality of life and
- iii. A prolongation of survival.

Post-treatment:

- a. There must be pain alleviation
- b. Restoration of Luminal Potency
- c. Skeletal integrity and
- d. Organ function with minimal morbidity.

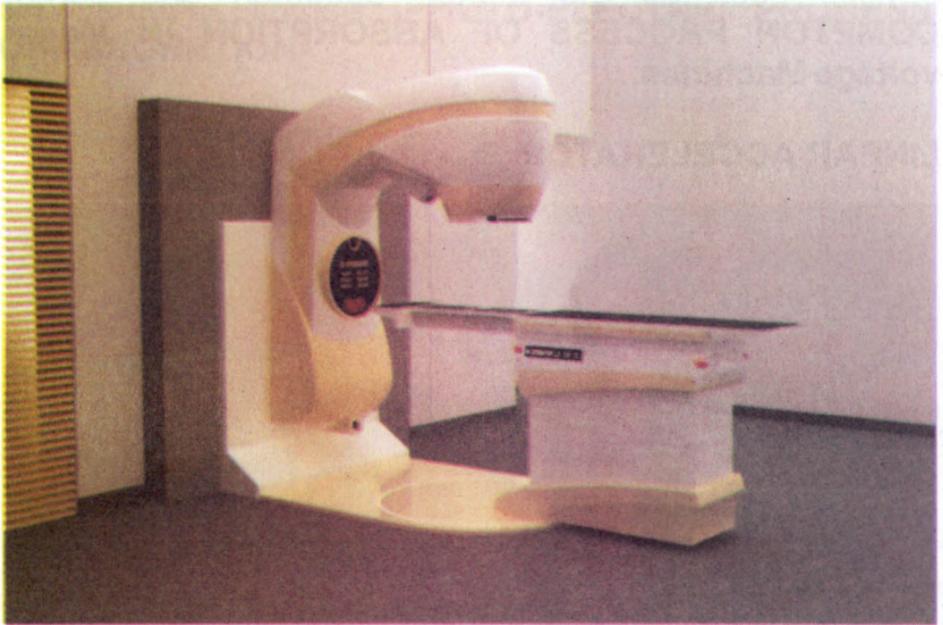
All symptoms that produce discomfort or affect self-sufficiency of the patient require treatment.

TELETERAPY or EXTERNAL BEAM THERAPY (EBT)

This is delivered by **Cobalt** equipment. It is the oldest and simplest method of modern High Energy (Mega-voltage) radiotherapy machine. This is the preferred equipment in developing countries: it is rugged, 'NEPA' friendly, easy to use and relatively cheap to maintain.

It produces photons with energies of 1.17 to 1.33 million electron volt (MeV) with an average energy of 1.25MeV. The maximum dose of these gamma rays is delivered 0.5cm beneath the skin surface.

COBALT- 60 MACHINE



LINEAR ACCELERATOR – In this machine, a beam of high speed electrons is focused on a high density metal target (usually Tungsten or gold) resulting in the production of X-rays.

X and Gamma rays are both photon beams differing only in their ways of production. Gamma rays are produced intranuclearly while X-rays are produced extra-nuclearly.

Photon energies of LINAC \longrightarrow 4 – 25MeV.

Depth of tissue penetration is directly proportional to the mean energy of the photon beam (about $\frac{1}{3}^{\text{RD}}$ or $\frac{1}{4}^{\text{TH}}$ of the maximum photon energy).

The greatest energy deposition occurs at 1 – 6cm beneath the surface depending on the energy, making these machines ideal for treatment of tumours within deep body cavities such as the thorax, abdomen and pelvis.

COMPTON PROCESS OF ABSORPTION IN Mega-voltage Machines.

LINEAR ACCELERATOR



ORTHOVOLTAGE X-RAY MACHINES

Produces photons with energies of 0.1 – 0.4MeV (100 – 400KeV) lower than either Cobalt or LINAC.

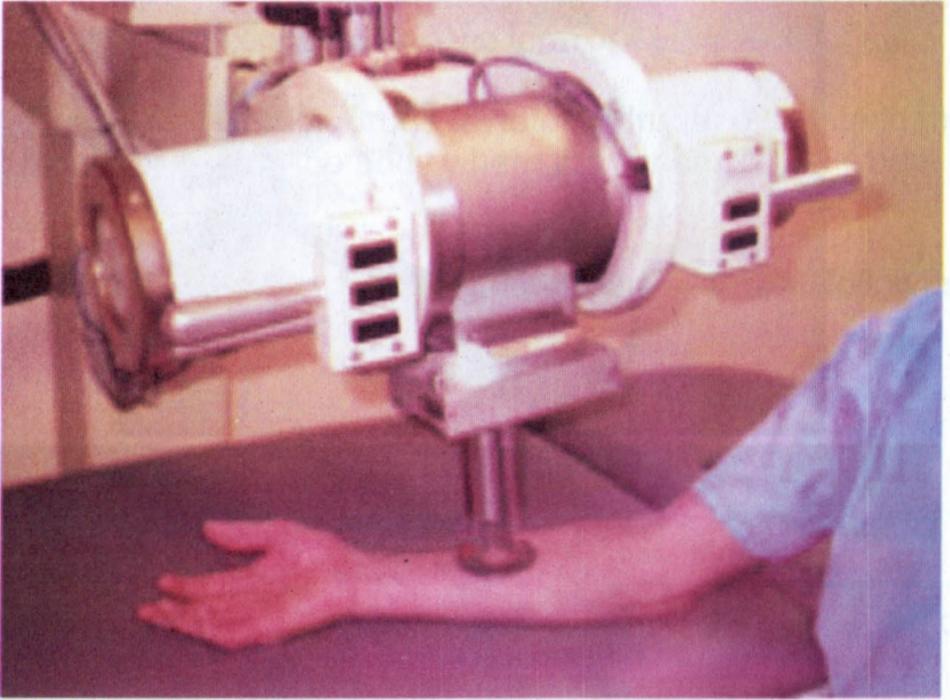
They were the mainstay of external beam radiation therapy before the advent of Cobalt or LINAC. They deposit most of their energy at or within millimeters of the skin surface i.e. **NIL SKIN SPARING – EFFECTS**); making orthovoltage x-rays suitable for the treatment of **SUPERFICIAL TUMOURS** of the skin and subcutaneous tissues only.

At high doses, it is used to produce **SUN-BURN-LIKE SKIN REACTIONS (MOIST DES-QUAMATION)** and subcutaneous fibrosis [**PHOTO-ELECTRIC PROCESS OF ABSORPTION**].

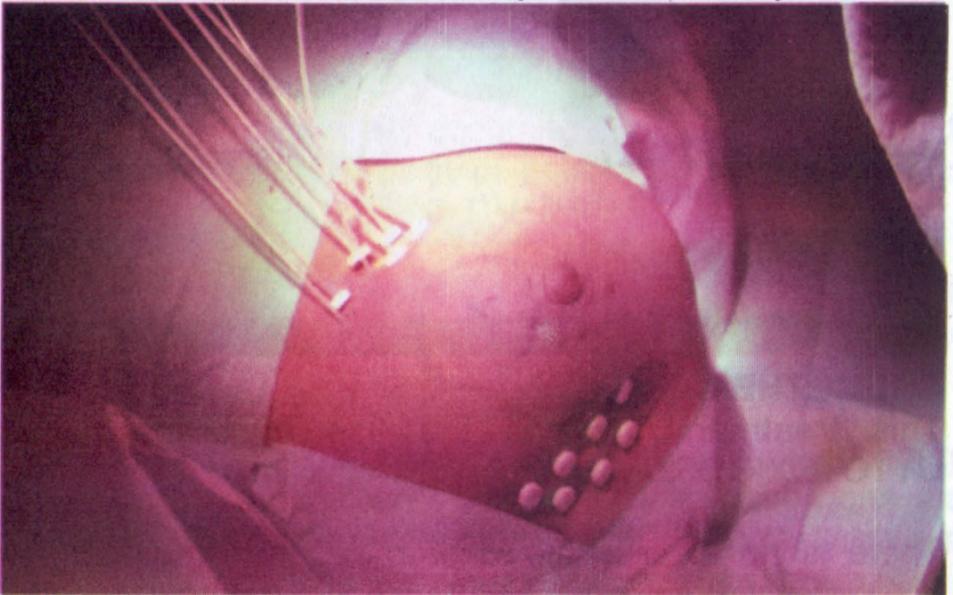


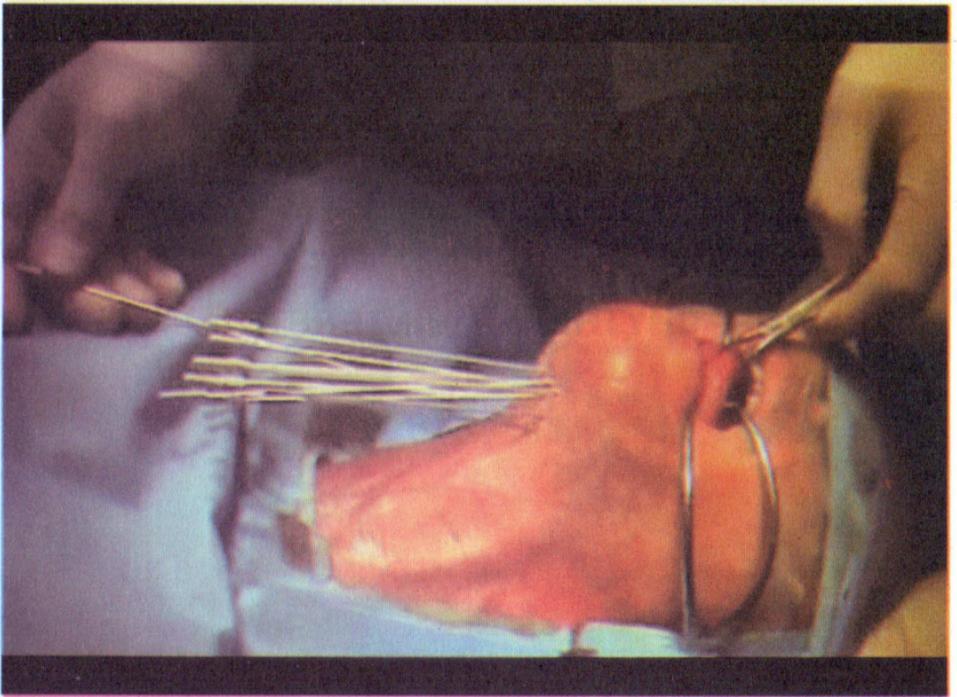
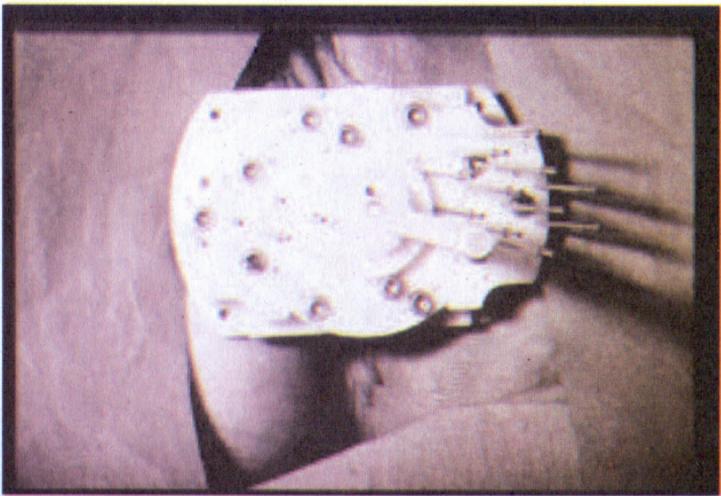
**Ex-President Olusegun Obasanjo with Prof Ajekigbe
at the Commissioning of the Linear Accelerator in
LUTH, 2007.**

ORTHO VOLTAGE MACHINE e.g. RT 305



BRACHYTHERAPY (INTERSTITIAL)





CHEMOTHERAPY

This treatment involves the use of drugs called **CYTOTOXIC DRUGS**.

There is no ideal cytotoxic drug i.e. the drug that will completely and selectively kill cancer cells without touching normal body cells.

This procedure may involve the use of one or more drugs given in cycles through injection, through a vein, into a body cavity or delivered orally in the form of a pill.

The cancer fighting drugs (cytotoxic drugs) circulate in the blood to parts of the body where the cancer is and where it may have spread.

It is considered a systemic treatment with the following possible side effects:

- i. Nausea and vomiting
- ii. Lowering of blood-count
- iii. Alopecia or temporary loss of HAIR
- iv. Weakness
- v. Loss of appetite
- vi. Hyper-pigmentation of the palms and nails
- vii. Tingling sensation at the tips of the fingers or peripheral neuropathy etc.
- viii. Weakness.

Chemotherapy can be adjuvant or Neo-adjuvant.

HORMONAL THERAPY

Hormones are naturally occurring substances in the body that stimulate the growth of hormone sensitive tissues; such as the **BREAST AND THE PROSTATE GLAND**.

When cancer arises in the breast or the prostate tissue, its growth and spread may be caused by the body's own hormones.

Therefore, drugs that block hormone production, or change the way hormones work and/or removal of organs that secrete hormones, such as the ovaries or testicles, are ways of fighting breast or prostate cancers respectively.

TARGETED THERAPY/MONOCLONAL ANTIBODIES (MAGIC BULLETS)

- A targeted therapy is one that is designed to treat only the cancer cells and minimise damage to normal, healthy cells.
- Cancer treatment that targets cancer cells may offer the advantages of reduced treatment related side effects and improve outcome.

There is no longer a 'one-size-fits-all' approach to cancer treatment. Even among patients with the same type e.g., breast cancer, the behaviour of the cancer and its response to treatment can vary widely.

It is becoming increasingly clear that specific characteristics of cancer cells and cancer patients can have a profound impact on prognosis and treatment outcome.

BIOLOGICAL THERAPY

This is referred to by many terms, including IMMUNOLOGICAL THERAPY, IMMUNOTHERAPY OR BIOTHERAPY.

It is a type of treatment that uses the body's immune system to facilitate the killing of cancer cells.

Types of biological therapy include INTERFERON, INTERLEUKIN, MONOCLONAL ANTIBODIES, COLONY STIMULATING FACTORS (CYTOKINES AND VACCINES).

PAIN CONTROL

Pain is the commonest symptoms experienced by cancer patients especially when they are dying. It is certainly the

most feared. Pain is present in over 85% of cases, and severe in over 45% of cases when cancer is the principal disease.

Various studies all over the world have demonstrated an unacceptably high proportion of patients dying with poorly controlled pain.

This is widely the case in Africa. The reasons for this include:

- i. Waiting for the patient to complain and expecting him to describe it in the more helpful detail usually met in acute conditions. The more advanced a chronic illness, the less is reported and the more vague the description is. Pain not reported does not mean pain is not there.
- ii. The failure of the doctor to elicit details of pain from attending nurses and relatives who usually know the patient better than the doctor does.
- iii. Presenting the right drug in the wrong dose, or with the wrong frequency or omitting an appropriate co-analgesic.
- iv. Fear of opioids causing the death of the patient.
- v. Withholding strong opioids because of respiratory depression.
- vi. Failure to consider the use of radiotherapy nerve blocks, hormone or cytotoxic chemotherapy and neurosurgery in pain control.
- vii. Failure to regularly and frequently review the patients' pattern of suffering.
- viii. Lack of knowledge of methods of pain control in cancer patients.
- ix. Failure to take into account the complex emotional, social and spiritual factors present in every dying patient and the regime being used.

THE PRINCIPLES OF CONTROLLING PAIN

The accurate diagnosis of the cause of pain is essential. Often; the patient has several different sources of pain.

The Pain may be due to the:

1. The Cancer: e.g. Bone metastasis;
 - Soft tissue infiltration
 - Nerve Compression
2. Treatment related: e.g. post-operative adhesions.
3. Associated problems: e.g. constipation; pressure-sores
OR
4. Unrelated problems: e.g. Osteoarthritis.

Only when the source of the pain has been defined can the appropriate management of that pain be considered.

THE MANAGEMENT WILL INCLUDE

- a. A clear explanation of the problem to the patient
- b. The use of analgesics
- c. The use of specific treatment modalities such as: Surgery, radiotherapy, hormones, cytotoxic drugs only, in the light of the patient's general condition and likely progress.

THE STEPS TO BE FOLLOWED

1. Determine the exact site and type of each pain by a careful history and physical examination.

A. BONE METASTASIS

Usually 2 components

- (i) ADULLACHE over a large area
- (ii) A clearly localised area of pain and tenderness over the affected bone

B. VISCERAL PAIN

Dull and deep seated and described as an aching over an organ such as the liver or kidney.

C. NERVE COMPRESSION

Pain due to an adjacent tumour localised to one or two dermatomes. Often described as an ACHING or STABBING pain.

D. DYSAESTHETIC PAIN

Due to nerve or nerve root infiltration. Described as "discomfort", "burning", 'numbness"

E. HEADACHE OR CEREBRAL METASTASIS

Described as 'dull'; 'oppressive', 'vice-like' and characteristically worse on waking or in the late evening.

F. HYPERAESTHESIA OF THE SKIN

Generalised increase sensitivity in the skin felt on light touch; relieved by firm pressure.

G. MUSCULAR PAIN OR SPASM

1. Often associated with underlying bone mets.
2. Choose an analgesics regime appropriate to each type of pain.
3. Select drugs with minimal side-effects and which are compatible with each other.
4. Check and recheck regularly whether adjuvant drugs are appropriate for new or developing problems.
5. Take time to explain every small detail to the patient and relatives involved in care and all associated colleagues (medical and nursing).
6. Review the regime regularly.

THE ANALGESIC LADDER

The commonly used analgesics may be grouped as below:

- a. NON-OPIOIDS: Aspirin, paracetamol, Non-steroidal anti-inflammatory drugs (NSAIDS) e.g Indomethacin, Naproxine.
- b. WEAK-OPIOIDS: Codeine usually as CODIS (Codeine with aspirin).
- c. STRONG OPIOIDS: Morphine; as the patient's pain becomes more severe there will be a need for stronger analgesic.

An analgesic should be prescribed according to the known duration of effectiveness ensuring that the pain is constantly controlled and never allowed to re-emerge.

DRUGS	DURATION
Aspirin	4hrs
Paracetamol	4hrs
Indomethacin	5hrs
Codeine	4hrs
Morphine Solution	4hrs
MST	10–12hrs

THE USE OF ORAL MORPHINE (ORAMORPH)

Dispensed as liquid made up in chloroform water to a concentration specified by the prescriber e.g. usually 5mg/5ml and 50mg/5ml etc.

Initial dose 10mg 4hrly for the patient whose pain is no longer controlled by weak Opioid analgesics. A lower dose of 2.5mg 4hrly may be considered in the frail and elderly patient.

MST is a potent Opioid analgesic available in 100mg, 60mg and 30mg forms in slow-release morphine tabs and the total daily dose is the total required using solutions of Oramorph e.g. 10mg 4hrly is equivalent to 60mg per day i.e. 30mg MST tab BD.

The dose should be titrated against the patient's pain and regular review is important. Usually a 4HRLY prescription.

SIDE EFFECTS

1. **NAUSEA AND VOMITING:** – $\frac{1}{3}^{\text{RD}}$ of patient on morphine will suffer nausea and vomiting but only for the 1st week of treatment. The symptoms can be controlled with anti-emetics e.g. METOCLOPRAMIDE 10mg 8hrly. Haloperidol 0.5mg 12hrly or Prochlorperazine 5mg a.c. (before meals tds thrice daily)
2. **SEDATION:** Only a problem in the 1st few days.
3. **CONSTIPATION:** A laxative e.g. Lactulose should always be prescribed prophylactically. Bisacodyl or Senokot are also good.
4. **RESPIRATORY DEPRESSION:** Is not a problem provided the patient is commenced on a small dose then titrated against the pain.
5. **ADDICTION AND TOLERANCE:** Are not problems of practical importance in the use of morphine from the pain of advanced cancer.

STRONG OPIOIDS – (OTHER ROUTES)

Ideally, the oral route should be used whenever possible. When patient is vomiting or unable to swallow due to obstruction from tumour in the mouth, pharynx, oesophagus, or stomach or to a diminishing conscious level, then an alternative route is needed.

SUB – LINGUAL ROUTE

Morphine solution is absorbed from the buccal mucosa and can be given to the moribund patient by the family.

N.B. – For the sublingual route to be effective: for tablets, the patient's mouth must be moist.

RECTAL ROUTE

Morphine suppositories like morphine solution must be prescribed 4hrly suitable strength 30 – 60mg.

INJECTIONS

Morphine should be prescribed sub-cutaneously 3 – 4hrly. There is no need to give it I.M. Injection volumes should be very small. The smaller, the less painful.

This route can be used when the pain is overwhelming and in **BREAKTHROUGH PAINS** associated with **PAINFUL PROCEDURES** E.G. bad ulcer/wound redressing, re-catheterization etc.

N:B – Morphine by sub-cutaneous injection is 3 times as potent as oral morphine i.e. 15mg morphine SC is equivalent to 45mg morphine orally. Patients converting from subcutaneous to oral morphine require 3 times the dose.

The regular analgesics regime can be supplemented by:

- (i) Increased oral dose of morphine one hour before a painful procedure.
- (ii) Subcutaneous morphine given 30 mins before a painful procedure.
- (iii) **ENTONOX** (nitrous oxide and oxygen - if available with a mask or intra-nasal tube).

SAME WITH ANTICIPATORY PAIN

Morphine can also be administered using a SYRINGE – DRIVER or a BATTERY – OPERATED PUMP which delivers a constant subcutaneous infusion of morphine over a 24hr period. If necessary an anti-emetic or sedative can be included in the morphine solution.

N.B – There is no place for the use of I.V STRONG OPIOIDS in the management of the pain of advanced cancer. It is not a more effective route than SC and it will minimise or prevent the development of tolerance.

In developing countries, a butterfly needle can be inserted sub-cutaneous and the drug injected regularly, say 4hrly.

ADJUNVANT DRUGS – (Co-analgesics) and some other drugs can help complement the strong opioids used in the control of the pain of advanced cancer e.g.

- a. The Non-steroidal anti-inflammatory drugs e.g. in the control of pain due to bone metastasis and soft tissue infiltration.
- b. Steroids: can help in the control of pain caused by nerves and nerve – root compression by tumour and the headache caused by raised intra-cranial pressure. Dexamethasone which is by a factor of 7 more potent than Prednisolone. It is the steroid of choice – and the dose is 4 – 16mg in daily division. To avoid any long term side effects, the dose should be reduced gradually, over the following 2 – 3wks.
- c. TRICYCLIC ANTI-DEPRESSANTS: Are of benefit in controlling DYSAESTHETIC PAIN caused by nerve and nerve root infiltration by tumour e.g. amitryline commencing with a dose of 10mg bd.
- d. Anticonvulsants:- Also help in controlling stabbing dysaesthetic pain e.g. phenytoin sodium 50 – 100mg

- bd; sodium valproate (valproic acid) 200mg tds, carbamazepine 100–200mg tds.
- e. Muscle Relaxants: will help when pain is due to muscle spasm often associated with underlying bone mets e.g. Diazepam 5-20mg nocte.
 - f. Antibiotics: The pain caused by an ulcerated area even when a bacteriology swab reveals no significant growth of pathogens. A trial of metronidazole is worth considering particularly when there is a bad smell from the wound.

OTHER MODALITIES OF TREATMENT

- (a). Palliative Radiotherapy: Plays an important part in the control of pain due to tumours.
 - i. Pain due to bone metastasis. The benefit of radiotherapy is seen within 2-4 weeks.
 - ii. Pain due to Nerve and Nerve Root compression.
 - iii. Pain due to extension into an adjacent organ giving discomfort or dysfunction e.g. Ca Cervix extending into bladder or bowel.
- (b). Hormone Therapy: For patients' hormone response tumours (Breast and prostate Ca in particular)
- (c) Cytotoxic Chemotherapy: By reducing tumour bulk, cytotoxic drugs can help in the control of pain.
- (d) Orthopaedic Procedures: Prophylactic internal fixation of a weight-bearing bone (when a pathological fracture through a large metastasis is likely) can help in controlling the pain due to metastasis.
- (e) Nerve Block (Neurolytic Block)
 - 1. Cordotomy (Surgical Neurotomy): Anterior to the dentate ligament is the spino-thalamic tract for pain and touch. Anterior to this is the PYRAMIDAL TRACT for motor functions. Between C1 and C2 using Cordotomy machine, pass electric current for between 5 and 30secs to the spinothalamic tract.

2. Chemical Neurolysis – Using intrathecal 100% alcohol injections 2mls only.
3. STRONTIUM-89 for Ca Prostate bone pain control.
4. MARCAIN INJECTION – For Superficial pain control e.g. in cutaneous Ca manifestation.

PAIN CONTROL: – CHECK LIST SUMMARY:

- Accurate diagnosis of cause of pain.
- Analgesics: - Non-opioids, weak and strong opioid.
- Adjuvant drugs (Co-analgesics)
- Radiotherapy
- Hormone therapy
- Cytotoxic chemotherapy
- Orthopaedic procedures
- Neurolytic Procedures (Neurolytic Procedures)
- Transcutaneous nerve stimulation, acupuncture
- Neurosurgical procedures.

Dying from cancer (Hospice Care)

The process of dying from cancer can be divided into 5 consecutive stages thus:

1. DENIAL
2. ANGER
3. BARGAINING
4. DEPRESSION
5. ACCEPTANCE

This is the KUBLER – ROSS STAGING SYSTEM of Dying from cancer.

HOSPICE CARE (PALLIATIVE CARE)

“NMTBD” ??Nothing More To Be Done.

There comes a stage in cancer management when both the Doctor and the patient know the time is up. What next

before death comes? Cancer affects tissues of the body and those of the spirit.

PREVENTIVE MEASURES / EARLY DETECTION

- Know the signs of cancer
- Breast self-examination
- Mammography – The American Cancer Society recommends that screening (mammography) should begin at 40 once every 2 years and annually at 50 and above.
- Check tumour markers e.g. PSA in men from age 45 – CEA for colo-rectal carcinoma; CA – 125 for ovarian tumours etc.
- General cancer screening once a year as from the age of 50.
- Pap – Smear

If negative in 3 consecutive annual screening, repeat once every 3 years.

(In all women of child – bearing age).

- Vaccination against Ca Cervix.
- Early Detection / Diagnosis/Treatment lead to cure.
- Delay may lead to DISASTER.

HOW PREPARED IS NIGERIA IN THE BATTLE AGAINST CANCER

NUMBER OF MEGAVOLTAGE MACHINE & POPULATION PER MEGAVOLTAGE MACHINES IN SELECTED COUNTRIES i.e. (CANCER TREATMENT MACHINES)

COUNTRY	DEPT. OF RADIOTHERAPY & ONCOLOGY	COBALT 60 MACHINE	LINEAR ACCELERATOR	TOTAL MEGAVOLTAGE MACHINE	RATIO OF TREATMENT MACHINE PER MILLION POPULATION
AUSTRALIA	42	4	86	90	4.80 i.e. 0.21 million citizens per machine
CHINA	453	381	286	667	0.53 i.e. 1.89 million citizens per machine
IDIA	188	256	35	291	0.30 i.e. 3.33million citizens per machine
JAPAN	611	213	603	816	6.46 i.e. 0.15million citizens per machine
PAKISTAN	19	21	13	34	0.26 i.e. 3.85million citizens per machine
SRI - LANKA	4	7	0	7	0.37 i.e. 2.7million citizens per machine
INDONESIA	16	15	9	24	0.12 i.e. 8.33million citizens per machine
BANGLADESH	11	10	1	11	0.09 i.e. 11.1million citizens per machine
NIGERIA	8	2 Functional	2 Functional	Available - 8 Functional - 4	0.03 i.e. 33.3million citizens per machine

EGYPT	35	25	28	53	0.8 i.e. 1.26million citizens per machine
SOUTH AFRICA	18	16	24	40	0.78 i.e. 1.13million citizens per machine

From the above table, the population of Nigerians served by a Megavoltage cancer therapy machine is over 33 million Nigerians.

Most patients have little or no access to radiation oncology services.

In Nigeria today, there are only 30 Radiation Oncologists, 8 Medical Physicists, 18 Radiotherapy Technologists, 26 Oncology Nurses, 5 Linear Accelerators, 3 Cobalt-60 machines, 2 Orthovoltage machines, 2 Conventional simulators, 5 CT Simulators, 5 Centres with 3D treatment Planning System, 3 Low dose Rate (LDR) and 1 High Dose Rate (HDR) brachytherapy machines and 6 Mould Rooms.

Therefore, a large deficiency exists for Radiation Oncological Services in Nigeria.



Prof. Ajekigbe and Colleagues while in Manchester in 1991

SOME PUBLISHED RESEARCH STUDIES.

1. A. T. AJEKIGBE Fear of Mastectomy: The most common factor Responsible for late presentation of carcinoma of the Breast in *Nigeria Clinical ONCOLOGY* (1991)3: 78–80.

STUDY SETTING: 2,154 BREAST CANCER PATIENTS OF ALL AGES and socio-economic groups were questioned over 6 years (1984 to 1989) on their reasons for not presenting at the hospital sooner than they did

through questionnaire: 87% of them presented in stage III and IV.

SUMMARY OF FINDINGS

The most common reason for delay (963 patients or 44.7% was fear of mastectomy). Other reasons given include preference for prayer houses or spiritual healing homes in 291 patients (13.5%), a belief that the lesion was inflammatory in 183 patients (8.5%) i.e. ignorance. Preference for Native Doctors or Herbalists in 497 patients (23.1%) and economic reasons in 220 (10.2%).

2. A.T. AJEKIGBE: A review of results of Total Mastectomy and conservative Surgery with Radiotherapy in the Treatment of early breast cancer. *Nigerian Journal of Internal Medicine Vol. 2 No. 1 1999 (1 – 3).*

STUDY SETTING: To present evidence to local surgeons that both mastectomy and breast preservation plus radiotherapy are equally appropriate in the management of early carcinoma of the breast.

SUMMARY OF FINDING: Data from Helsinki study; Milan Trial; Guy Hospital Trial; Edinburgh Trial; Massachusetts Trial and the Princess Margarette Hospital Trial in Canada confirming the appropriateness of both methods for early breast cancer were presented. This is to encourage local patients to present early to avoid mastectomy.

3. A.S. AKANMU, A.T. AJEKIGBE, et al: The association between cancer of the breast and the ABO and Rhesus D antigen phenotype in Lagos, Nigeria: A case control study.

STUDY SETTING: – To determine whether inheritance of ABO and Rhesus D antigen phenotypes constitute a risk factor for development of cancer of the breast. Routine ABO and Rhesus D phenotyping was carried out on washed red cell specimen of all cases and controls.

SUMMARY OF FINDINGS: – Negative association was established between inheritance and Rhesus D antigen and the development of cancer of the breast. Rhesus D antigen phenotype may be protective against cancer of the breast.

4. A.T. AJEKIGBE, A.T. ONAJOLE, et al: Concern of cancer patients in Lagos Nigeria. Archives of Nigerian Medicine and Medical Sciences: 2(2): 21 – 24 (2005)

STUDY SETTING – To determine the concerns of cancer patients in Lagos after the diagnosis has been confirmed. A total of 96 patients were included in the study.

SUMMARY OF FINDINGS: – Fear of physical health and death in about 70% of the patients. Pain in about 60%; finances in about 50%; any future for them; their children in about another 50%. Other concerns are slow painful death; being unable to earn a living etc.

5. A.T. AJEKIGBE, ANUNOBIC.C., et al – Carcinoma of the penis: Experience from the Lagos University Teaching Hospital, Lagos; Nigeria. *Nig. Qt. J. Hosp. Med.* Vol. 21 (1) Jan – March 2011.

STUDY SETTING – To document the prevalence, age distribution, site and histological types of penile carcinoma at the Lagos University Teaching Hospital over a 20-year period.

STUDY FINDINGS – There were only 7 cases of carcinoma of the penis accounting for 1.9% of malignant lesions of the male genital tracts in LUTH, 3 (42.85%) of which were on the shaft of the penis. The ages of the patients ranged from 42 – 79 years with a mean age of 52.2 years. Majority of the cases were in the 5th decade. All the cases were well – differentiated carcinomas.

Carcinoma of the penis is rare in Lagos, Nigeria. This may be attributed to the common practice of neonatal male circumcision in Nigeria.

CONCLUSION

Mr. Vice Chancellor Sir, cancer is the worst disease anyone can think of. It is a chronic disease that dehumanises. It makes a mockery of the bold, the brave, the rich, the powerful, the beautiful, the adored, the mighty, the highly placed and the lowly placed. It has absolute contempt for position, gender or age. It is a terrorist of the highest order. May Almighty God protect us all from cancer, Amen.

The Department of Radiation Biology, Radiotherapy, Radiodiagnosis and Radiography did not start with such a long name. It started as Department of Radiation Biology and Radiotherapy with a lot of interest at the early stage in Nuclear Medicine (Thyroid uptake tests, radio-Isotope scans of different organs with a rectilinear scanner; tissue cultures; cancer treatment with Isomatix and Orthovoltage machine (an RT 305) and LDR manual Brachytherapy equipment in the 60s before the donation of a Theratron 780 cobalt-60 MAGEVOLTAGE treatment machine in 1973. All these were managed by Prof. Kurt Solomon, Prof. Fregene a physicist, Associate Professor J.T.K. Duncan and Assoc Prof. Ajayi (Radiotherapist and Clinical Oncologist). Radiodiagnosis was a department on its own. Radiography unit was only born a very few years ago.

The department as it is today is actually 5 in 1 i.e. RB, R, R, & R + Medical Physics.

The question of all Radios (AM or FM) being together does not arise because though they all use ionizing radiations, they perform absolutely different duties in Medicine. I am, for example, a cancer specialist which a Medical Physicist, a diagnostic radiologist or a radiographer is NOT.

If we all must be forced into a marriage by the University Sir; why not a single name of Department of Radiation Medicine? But with this, we shall be short-changed in terms of number of Professors and other academic staff. Best solution Sir, is a divorce i.e. a break up into 2 or 3 departments as suggested above.

As far as cancer is concerned, Early Detection (i.e. what to look out for in our complex body and screening) plus early management is the best remedy.

RECOMMENDATIONS

Is cancer management in Nigeria really management in a depressed economy?

Is our economy really depressed?

What is a depressed economy?

Man made depression?

Mismanagement – made depression?

Incompetence – made depression?

Lack of foresight –made depression?

Planlessness made depression?

Confused – priorities made depression?

Lack of sympathy for the masses made – depression?

Lack of love for the masses made – depression?

We can go on and on.

But we need to differentiate between WANT and NEED.

We should not let our WANT over-ride our NEED.

(Mahatma Gandhi).

SOLUTION / RECOMMENDATION

1. Allocate an OIL BLOCK to cancer for ED and M i.e. early detection and Management of cancer. Stop allocating oil blocks to individuals.
2. Allocate to cancer (ED and M) 5% of the Gross-Income of all members of the executive and legislature at Federal, State and Local government levels and you will see the wonder these deductions will do in early detection of cancer and its management.
3. Divide the department into at 2 department viz: - (a) Radiation Biology and Radiotherapy
(b) Radiodiagnosis and Radiography.
4. Finally, I very strongly recommend, VC sir, that the Laughing Gas which is a mixture of Nitrous Oxide and Oxygen and the trade name of which is ENTONOX that I successfully used in the dressing of the very bad bilateral breast ulcer of a patient in LUTH in early 90s that earned me a commendation letter from LUTH Management be made in Canister forms and used instead of TEAR GAS during students or general riots or protests or whenever law makers are scaling fences for crowd control without harm to the protesters who will instead laugh back to their hostels or markets or law-making chambers or homes or stalls.

ACKNOWLEDGEMENTS

The Vice Chancellor sir, this speaker is an orphan but he is not from an orphanage.

My greatest thanks goes to our Creator, the Almighty God also called Allah, Elli, Jah, Oluwa, Olorun, Eledumare, Chineke, Abasi for granting me this privilege today and for making today's event a reality. I never thought this day will ever come to pass in my life as my father died very early in my academic career. He was my sole sponsor in the University before his sudden demise on the 15th of September 1970 from CVA (stroke) in a taxi cab on his way from work. He died at UCH Ibadan within 12hours without regaining consciousness. (He must have had massive intracranial haemorrhage). I had just finished my 2nd year at the Department of Pharmacy of the University of Ife (i.e. Prelim + Part 1) then. He was 55. I have already out-lived him. What if He (the Almighty) had made the "short-life" hereditary? He has the power to do it. This is why the question was asked in SURATUL YASIN that which of our Lord's favour shall we deny? It is God's favour to live long.

My gratitude also goes to General Yakubu Gowon who was the then Nigerian Head of State. Immediately after the Civil War, he decided to award Scholarship to undergraduates in Nigerian Universities then. We were the first set of beneficiaries after the Civil War and my award came about 6 weeks before my father's sudden death. I had not even disclosed this at home then and thus my University education continued uninterrupted after the demise of my sole sponsor.

I appreciate my late mother Alhaja S.A. Ajekigbe for having me the time she did after a lot of trauma for having

only girls. Even the 2nd wife continued to have girls only. I have about six girls as my senior before Almighty God sent me to stop them from crying – ADEREMI (His Coming Stopped Me from Crying). I have another boy after me who graduated as a lawyer from Ife in 1983 (he practices in Kaduna); then another girl, the last one, who was born on the 20th of January, 1960. Our mother passed on at the ripe age of 90 in 2003. I want to beat her record. Why shouldn't I?

I appreciate the Chairman of the Council and Pro-Chancellor of the University of Lagos, Professor Jerry Gana (OFR), the Vice Chancellor, Professor Rahman Adisa Bello, the Deputy Vice Chancellor Academics and Research (Professor Babajide Alo) and other members of the University Management. I also appreciate the Provost of the College of Medicine, Professor Folashade Ogunsola and the immediate past Provost Professor Wole Atoyebi and the present Dean, Faculty of Clinical Sciences Professor Folabi Lesi and a past Dean of the Faculty of Clinical Sciences, Prof Adefule – Oshitelu.

I thank all my senior colleagues in Radiotherapy and Clinical Oncology: Professors J.T.K Duncan, Ajayi (late); Francis Abayomi Durosini-Etti; O.B. Campbell and K.K. Ketiku. I also appreciate Professor Fregene my Medical Physics teacher and all present staff, academic and non-academic, in the department.

I acknowledge the immense contribution of the organising committee of this event for a very successful event.

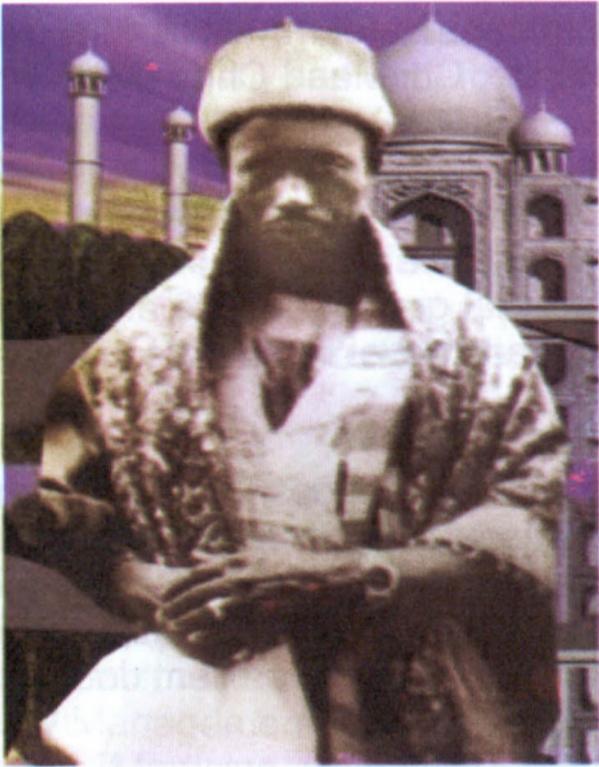
I appreciate the presence and support of Oluyole Social Elite from Ibadan, my egbons here present: Chief Ajibola Ogunsola, Chief Ariyibi, Alhaji Chief Osho, Alhaji Barrister

Shittu, Alhaji Barrister Kareem, Mr. & Mrs. Awokulehin, Chief Mrs. Ehimeake, Chief and Chief (Mrs). Anegebe, Dr. W.E. Bello, etc.

I greatly appreciate the presence of cancer survivors and their family members here present. I congratulate you for enjoying God's special grace and love and I pray that will cancer never recur and never re-emerge in any member of your family, Amen.

My sincere gratitude also goes to the Pharmaceutical companies here present and those who are unable to come for their assistance and support. Same goes to the departmental technical and administrative staff for their wonderful co-operation and my resident doctors and other colleagues.

Finally, my thanks to my loving and lovely children Toyosi, Bisola, Lolade, Ola, Moji and my grandchildren KIKI and DESIRE and of course my better half Mrs. Shakirat Yewale Ajekigbe. Thank you for your support, prayers and for giving me peace of mind.



Alhaji R. A. Ajekigbe

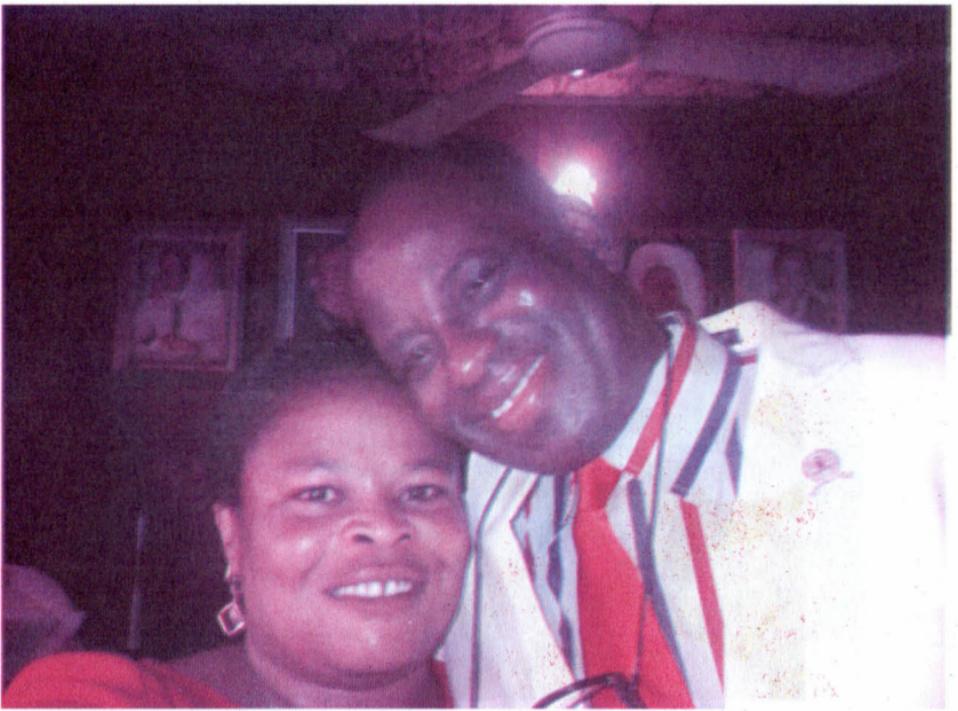


Alhaja S. A. Ajekigbe









Mr. Vice Chancellor sir, distinguished ladies and gentlemen: this audience is greatly appreciated.

Thank you all for listening and

**DEO GRATIAS
SHUKURAN
GOD BLESS
DANKE
E SE PUPO
DAALU
NAGODE**

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