DEPARTMENT OF PATHOLOGY

Pathology e-gazette

Volume 2 Issue 1 FEB 2023

PRESENT CANCER SCENARIO IN INDIA AND ROLE OF EARLY DIAGNOSIS.

Every year on February 04, World Cancer Day is observed across the world to raise awareness regarding cancer treatment and early diagnosis Origin of this day goes back to first world summit against Cancer organised in France in year 2000. .

CANCER : Cancer is a large group of diseases that can start in almost any organ or tissue of the body when abnormal cells grow uncontrollably, go beyond their usual boundaries to invade adjoining parts of the body and/or spread to other organs.

Information on recent cancer statistics is important for planning, monitoring and evaluating cancer control activities

In India, the incidence of cancer cases is likely to increase from 1.46 million in 2022 to 1.57 million in 2025. The national average for the year 2022 of crude rate of incidence per 100,000 is 100.4; for males, 95.6 and females, 105.4.

- **Lung and breast cancers in males and females, respectively, remain to be the leading sites of cancer.**
- **Lymphoid leukaemia is the leading site of cancer in the childhood age group among both genders.**

ASIR(AGE SPECIFIC INCIDENCE RATE) increased with increasing age and it was higher in the female reproductive age group(15-49 yr).

Lung cancer was estimated to be 1,03,371cases in 2022 and it featured in the top five leading sites for both males and females.

THE CURRENT ESTIMATES FOR CANCER IN INDIA INCREASED BY FIVE PER CENT (14,61,427 IN 2022 COMPARED TO 13,92,179 IN 2020)

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Estimated proportion of top 10 leading sites of cancer in India by gender – 2022.

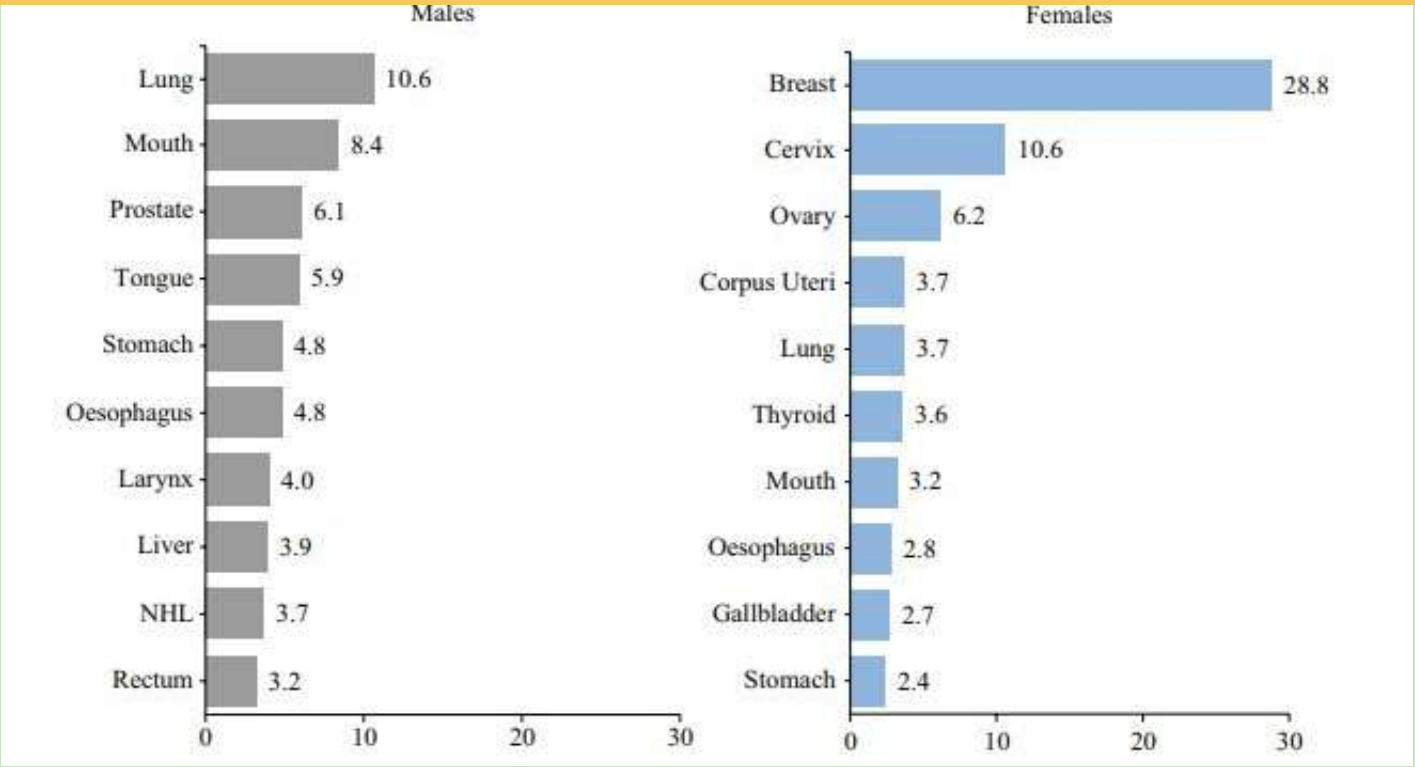

Fig. 1 presents the estimated top five leading sites of cancer; among males these were lung (10.6%), mouth (8.4%), prostate (6.1%), tongue (5.9%) and stomach (4.8%). The estimated top five leading sites of cancer among females included breast (28.8%), cervix (10.6%), ovary (6.2%), corpus uteri (3.7%) and lung (3.7%). Liver cancer (3.9%) was among the leading ten cancers in males and not in females, whereas thyroid (3.6%) and gallbladder (2.7%) cancers were in top ten among females but not in males.

- **Approximately two thirds of global cancer deaths are in less developed countries,where case fatality rates are higher due to late-stage presentation and less accessible treatment.**
- **The consequences of delays in care and advanced cancer are dire the likelihood of death and disability from cancer increases significantly as cancer progresses.**
- **It is therefore critical to identify barriers to early diagnosis and treatment and to implement programmes that provide access to care for all.**

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If you experience any of the signs and symptoms, don't be afraid to seek medical advice urgently.

A 68-year-old man presented with an enlarged inguinal lymph node that had been present for 6 months. Patient initially ignored the symptoms. Later on a biopsy revealed metastatic melanoma. Further investigations lead to detection of primary anorectal melanoma

Figure a) Metastatic melanoma in lymph node. b) Gross image of anorectal melanoma. c) Histopathological image of malignat melanoma of anorectal region showing melanin pigment.

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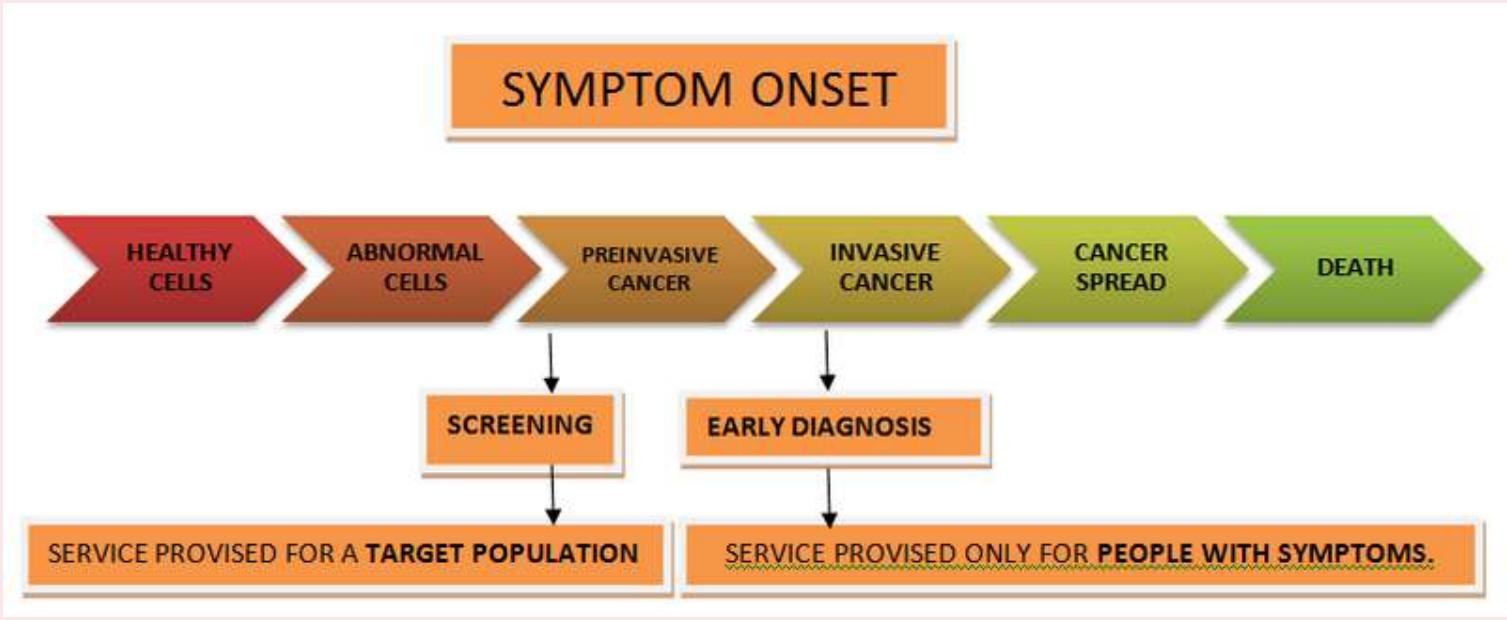
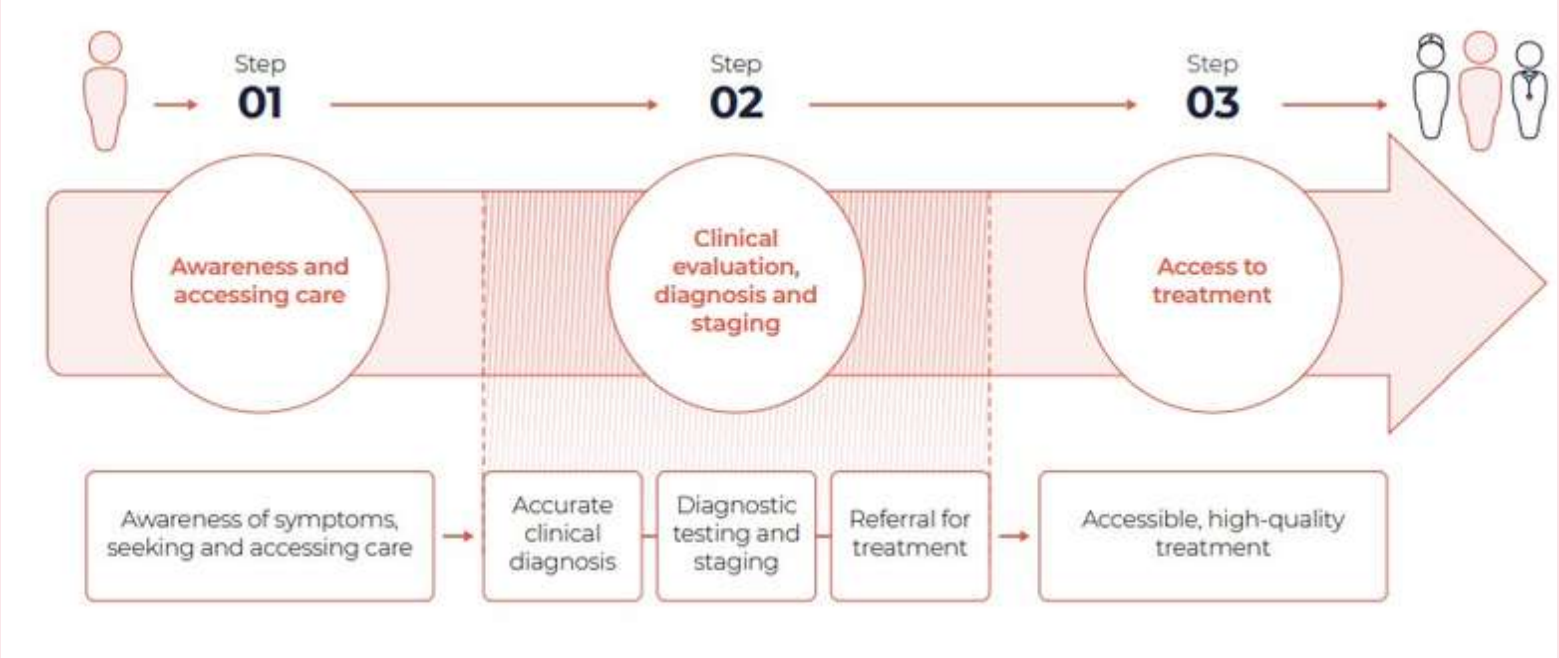


Distinguishing early diagnosis from screening



Steps in early diagnosis of cancer.

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Laboratory Diagnoses of Cancer

- Cytology
- Histopathology
- Immunohistochemistry
- Molecular and cytogenetic diagnosis
- Flow cytometry
- Tumour markers

1) CYTOLOGY

- **Fine Needle Aspiration Cytology (FNAC) is a simple, quick and inexpensive method**
- **It causes minimal trauma to the patient and carries virtually no risk of complications.**
- **Generally used to differentiate between neoplastic and non-neoplastic etiology.**
- **FNAC Is mostly used in the early diagnosis of Thyroid, Salivary gland, Soft tissue, Breast cancer and Lymph node metastasis.**
- **It is now also used for the early diagnosis of deep-seated malignancies with the help of radiological modalities like USG and CT.**
- **PAP Test: Cervical cancer has a poor prognosis. With the increased awareness of pap test screening, the rate of mortality due to cervical cancer has decreased.**
- **FLUID CYTOLOGY: By cytological examination of fluid, we can detect neoplastic cells secreted by tumor.**

2) HISTOPATHOLOGY

Histopathology (HP) is the standard for the diagnosis of neoplasia. In last few years its role has been defined further by widespread introduction of immunohistochemistry (IHC).

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FROZEN SECTION

Most common indications for frozen section are confirmation of neoplasms, evaluation of margins status, evaluation of metastasis intraoperatively.

TRUCUT BIOPSY

A well-tolerated and reliable procedure for providing a tissue diagnosis of malignancy before definitive treatment, and obviating the need for formal excision biopsy of lesions for which there is a low index of suspicion.

3)TUMOR MARKER

Anything present in or produced by cancer cells or other cells of the body in response to cancer or certain benign (noncancerous) conditions that provides information about a cancer, such as how aggressive it is, whether it can be treated with a targeted therapy, or whether it is responding to treatment. Ex : PSA, CEA, CA-125,B-HCG, AFP

4) FLOWCYTOMETRY

Means of identifying & measuring certain physical & chemical characteristics of cells or particles as they travel in suspension. May be used to characterize & count types of white blood cells in the evaluation of infectious diseases, autoimmune disorders or immunodeficiencies. It's also used to diagnose & classify leukemia or lymphoma.

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5) IMMUNOHISTOCHEMISTRY

An important application of monoclonal as well as polyclonal antibodies to determine the tissue distribution of an antigen of interest in health and disease.

- **Widely used for diagnosis of cancers & have brought about a revolution in approach to diagnosis of tumors of uncertain origin, primary as well as metastatic from unknown primary tumor**

6) MOLECULAR & CYTOGENETIC DIAGNOSIS

The technology in which the diagnostic material is processed for its nucleic acid composition so as to detect unique signatures/sequences which are specific for a known neoplasm. The newer methods being used for diagnostic and prognostic purposes in oncology practice are: (1) Polymerase chain reaction (PCR) and (2) Gene expression profiling/microarrays.

***PCR*: From detecting cancer to microbial infections, and now even fungal infections, PCR has become the gold standard of analyzing gene expression.**

***Next-Generation Sequencing(NGS)*, provide high speed and throughput that can produce an enormous volume of sequences with many possible applications in research and diagnostic settings.Detection of Tumor Viruses like e.g., HBV, human papillomaviruses 18 and 16, HHV8, HCV, EBV.**

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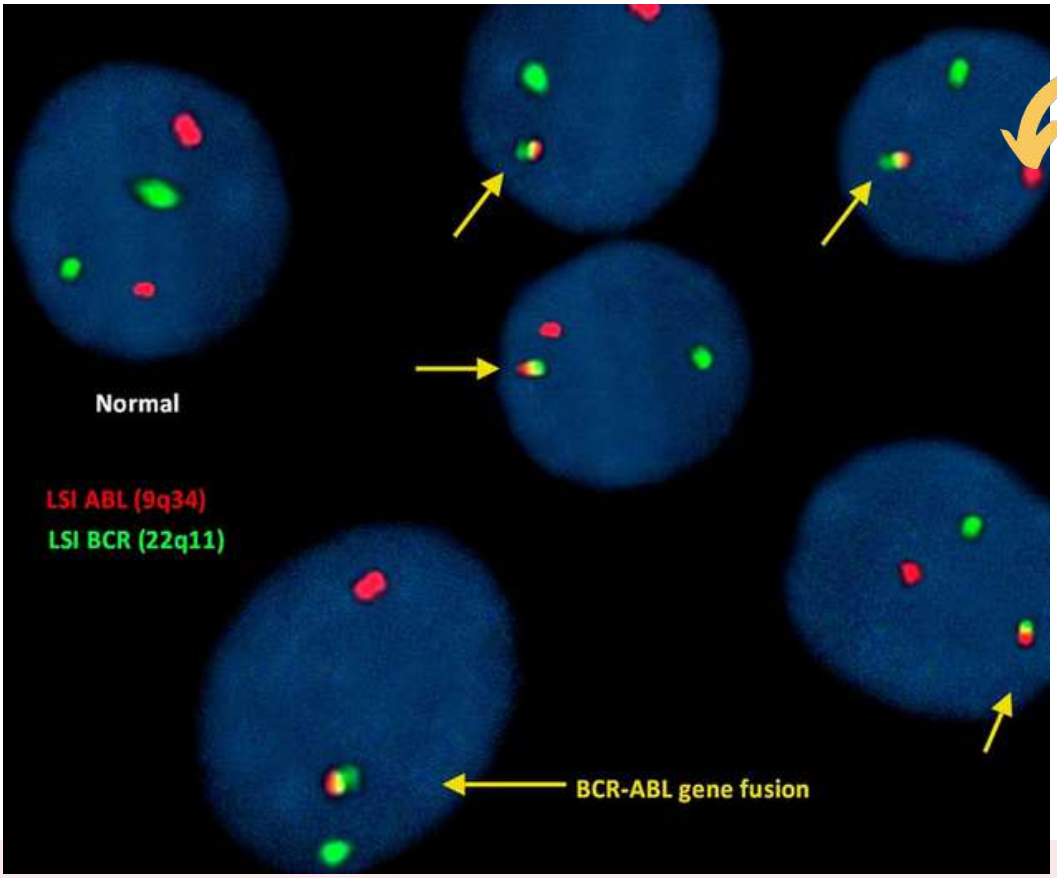
"You can be a victim of cancer or a survivor of cancer. It's a mindset."



QUIZ TIME

Identify the test given in the image and interpret it

Let's unite to make the world aware to close the gap in cancer care.

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