

Impact of Breast Cancer in Women’s of Satna District, Madhya Pradesh

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Abstract— Dynamic data is a common challenge in digital Image processing. It has played an important role in modern and previous era in community. In past, masses were using the process of Images processing in photogenic devices such as cameras, but as time changes technology changes. The camera has been replaced by Mobile Camera which is one of the convent resources. As the technology does not remain same and has been changed so far by new thoughts and ideas as different image processing, techniques, equipment’s, is programming tools. In research various programming language tools are used for manipulation of images processing (advance java, Mat lab, Scilab, Opencv, Artificial Neural Network). Medical imaging plays an important role in clinical study such as (x-ray, Ultrasound, Mammography, Computed tenography (C.T.), Magnetic Resonance imaging (MRI) are getting popular. In this context we have used agent–based coordinate between medical and research institution. In this paper we have studied the approximation of Image processing and proficiency applied for medical Image processing in Madhya Pradesh (M.P), India. In the first segment of our paper; we have given introduction of Satna district in Madhya Pradesh, Percentage of cancer patients in Madhya Pradesh and how it is affecting the people of Satna and about cancer research center and education in Satna. In second segment we have discussed digital image processing, techniques, equipment’s and some related work used in breast cancer diagnosis. In the third segment; we involve recent tools which are used for breast cancer diagnosis. Forth segment we have given list of observation that we have seen in the hospitals during our visit. In fifth segment conclusion of our work has been draw.

Keywords— Approximation; Masses; Cancer; Breast

I. INTRODUCTION

MADHYA PRADESH (MP) is a state in central India. Its capital is Bhopal and the largest city is Indore with Jabalpur, Gwalior and Ujjain being the mayor cities. Madhya Pradesh is second largest state in the country border the states of utter Pradesh to the northeast, Chhattisgarh to the southeast, Maharashtra to the south, Gujarat to west, and Rajasthan to the northwest. Its total area is 308,252 km.

Satna is a city in the district of Indian state of Madhya Pradesh. It is home for district administrative headquarter and 8 blocks include in Satna-Rampur, Raghuraj naga, Nagod, Unchahara, Amarpatan RamNagar, Maihar, Kotar, Birsinghpur, and Majhgawan [1].Satna is facing major problem related to Breast Cancer. There are many women’s who are registered and suffering from breast cancer in M.P. Birla hospital and district hospital Satna. Before this, breast cancer treatment was very difficult but MP. Birla hospital and District hospital has provided best facility to breast cancer patient with electronic test equipment.

During our visit in various hospitals in Madhya Pradesh (M.P.) we found low facilities to breast cancer patients as compared to other state. This is because of uneducated, less awareness, self-test knowledge, poor life style, and overweight and alcohol consumption. Main cancer in female is overy, breast and cervical.



Figure 1: Map of Madhya Pradesh



Figure 2: Map of Satna district

II RELATED WORK

According to Dr. Ganjewala 2009 cancer present in MP almost double than in up, relative present (%) of cancer in females was reasonably higher than in MP. [1]

In ICMR discussed in Madhya Pradesh (MP) cancer among *females* on the rising. According to national cancer registry program of India council of medical research of cancer among women in MP is well above the national average. In 2013 cancer cases are registered of female in India by 2.9% while during same period cancer increase was 3.8% in Madhya Pradesh [3]

III. RESEARCH AND EDUCATION IN M.P

Various research centers have been developing for research of breast cancer in M.P.

- Sanjay Gandhi Hospital Rewa.(SGHR)
- District Hospital Rewa.(DHR)
- Bombay Hospital and Research Center Jabalpur(BHRC)
- City Hospital and Research Center Jabalpur(CHRS)
- Metro Hospital and Cancer Research Center Jabalpur (MHJ)
- Charka Diagnosis Jabalpur (CDJ)
- District Hospital Satna(DHS)
- Birla Hospital Satna(BHS)
- Chirayu Medical College and Research Center Bhopal(CMC)
- Jawaharlal Nehru Cancer Hospital Bhopal (JNHB)
- Bansal Hospital and Research center Bhopal (BHCB)

IV. TECHNIQUES AND EQUIPMENT OF BREAST CANCER DIAGNOSIS.

4.1 Techniques

There are various modern techniques for the diagnosis of cancer, such as

- Ultrasound
- Magnetic resonance imaging(MRI)
- Nuclear Medicine

Ultrasound

Ultrasound image technique is major mode, widely used, readily available of images for the diagnosis of breast cancer. Breast ultra sound gives various tissue information from obtained by X-ray ultrasound. It is easy to use and real time technique. Breast ultrasound is a method of suggesting biopsies and other procedure. It is also allows assessment of fixation of surrounding tissues and vascularise combination of ultrasound and mammography is used to find out solid masses as benign or malignant. In young patients where the thickness of breast makes mammography less sensitive where ultra sound has an important role in diagnosis and delay of radiation exposure. [4]

Magnetic resonance imaging (MRI)

MRI is expensive, time consuming and not available widely. MRI may be used to find out multiple lesions, and tissues around implants. MRI does not use ionizing radiation(x-ray)MRI of breast contains valuable information about breast condition which cannot be identify by other imaging technique such as mammography and ultra sound. MRI exam is painless but some patient find uncomfortable during MRI images. It is normal for patient body being imaged to feel slight warm. it is important that the patient remain to patient perfectly still while imaged are recorded.[5]

Nuclear Medicine

Nuclear Medicine is currently not a major modality in breast imaging .Nuclear Medicine has Medical specialty that uses traces to diagnose and treat disease. Mostly designed cameras allow doctors to track the path of radioactive tracers. Nuclear medicine will provide the most specific and reliable information for a patient's particular

Doctors to track the path of radioactive tracers. Nuclear medicine will provide the most specific and reliable information for a patient's particular problem. Radionuclide imaging will have an increasing role to play as sentinel node biopsy replaces auxiliary dissection as the standard investigation for lymph nodes in the axilla. This will reduce breast surgery [7]

V. EQUIPMENT

Always high equipment achievement is required to ensure that any small changes that may indicate breast cancer are detected.

We visited MP BIRLA HOSPITAL & PRIYAMVADA BIRLA CANCER RESERCH INSTITUTE. They are using these machines for breast cancer diagnosis.

Allegers, Primus, and CT scanner used by doctor's engineers for performing numerical computations and

testing training mathematical algorithms. And image processing with application.

- a. Allegers' mammography machine.
- b. Siemens C.T. Scan Machine.
- c. X-ray equipment
- d. Primus radiation machines.

a. Allengers' Mammography Machine.

Alleger's mammography machine is used as test for the presence or absence or detect early breast cancer in women experiencing no symptoms and it. is also used to detect breast disease in women experiencing symptoms as a lump, pain and nipple discharge. During the training I could see allengers MAM-Venus Mammography Machine. A mammography, an equipment is rectangular box with a tube in which x-ray is produced. The module is used for x-ray exaction of the entire breast and allow only breast to be exposed to the x-rays and attached a device that holds the breast and positions at different angles. This machine can be rotated in 45°, 90°. Angles and women can face the machine with her arms by her standing position and is rotated 15- 20 degree to bring her side During examination close to breast-support table .an x-ray machine produces a radiation that passes through the body and records images on photography films.

Allegers' has some special feature.

Auto selection of radiation graphic factors as per patient's anatomy.

- A high-voltage generator.
- Monitors the x-ray transmitted through the breast. It increases the diagnostic capability.
- Programming for different breast size.
- Compression device
- Image recording system
- Self-diagnostic inter locks



Figure 3 Allegers0 angle



Figure 4 Allegers 90 angle

b. Siemens C.T. Scan Machine.

CT Scanner Machine provide best quality patient care simultaneously lowering costs .Siemens C.T. Scan Machine making world's most popular CT scanner. It has fast integrated workflow, fast 3D camera I mar Dual energy and 4D spiral, high perception diagnosis, reliable therapy, response, evaluation and Rich in information for more precise decisions at low dose. It is obtains details images of patient body. CT scan machine takes many picture as it routed around patient when she lie on the table and most often used to look at the breast to see if the cancer has spread to other organ.



Figure 5 Siemens C.T. Scan Machine

c. X-ray equipment

X-ray equipment is a part of mammography system.it consists of high voltage generator, x ray tube and tube filtration.

d. Radiation machines.

Primus linear Accelerator from Siemens is also known as a radiation therapy machine. The PRIMUS linear accelerator can be used for different treatment approach including 3D-conformal radiation therapy (3d CRT) Intensity-modulated radiation theory (IMRT) Stereotactic Radio surgery (SRS) And Stereotactic Body radiotherapy (SBRT).The Siemens PRIMUS is a highly advanced System that rotates around patient for precise radiation delivery. This structure is made for highly precision radiation therapy and multiple imaging. Siemens linear accelerator provides a precisely sculpted 3D RADIATION dose as 360 °around patient. This system monitors movement of tumor as patient breathe and it deliver radiation when the tumour is in exactly right places[4][5]



FIGURE 6.RADIATION THERAPY MACHINE, 90 ANGLES



Figure 7 Radiation Therapy Machine 180 Angle



Figure 8 Radiation Therapy Machine 270 an



Figure 9 Radiation Therapy Machine 360 angles

VI. OBSERVATION

S.No.	Date	Visit
1	15/10/17	Sanjay Gandhi Hospital Rewa.(SGHR)
2	15/10/17	Deistic Hospital Rewa.(DHR)
3	26/12/17	Bombay Hospital and Research Center Jabalpur(BHRC)
4	26/12/17	City Hospital and Research Center Jabalpur(CHRS)
5	27/12/17	Metro Hospital and Cancer Research Center Jabalpur (MHJ)
6	27/12/17	Charka Diagnosis Jabalpur (CDJ)
7	26/3/18	District Hospital Satna(DHS)
8	27/03/18	Birla hospital Satna(BHS)
9	29/03/2018	Navodaya Cancer Hospital and Research Center Bhopal(NCHC)
10	29/03/2018	Chirayu Medical College and Research Center Bhopal (CMC)

Room layout

We have seen the dark room and observed that room was complete dark with red light blinking in the room. It should be near the X-ray examination area. When a radiography film is exposed to a beam of x-ray can develop and examined after the film has been suitably processed in dark room. In this room there was developer, fixer and water. Image is developing in this developer liquid, then image was put in fixer and lastly it was cleaned by water. This room must be completed lightproof and water and electrical outlets to this room should be provided

VII. TOOLS USED IN DIGITAL IMAGE PROCESSING

Mammography proposing helps us to identify breast tumors. Different tools help to identify varying soft tissues notes and lumps. These tools are as follows
Matlab (Matrix Laboratory)

It is a high performance language for technical computing [6]

Scilab

It is open source freeware software for numerical mathematics and scientific visualization of plot 2D and 3D graphics.[7]

Octave

This open source interactive software system is used for numerical computation and graphics. [7]

Study of predication of Non-Linear and Dynamic System, Disease Prediction and Horoscope Predications going on using neural network. This method can also be used in the study of breast cancer [11][12]

Conclusion and Future Scope

This study includes different breast cancer diagnosis tools and its features. These tools are developed for the study area of Mammography of images processing in Satna District (M.P.) and helps to diagnosis breast cancer with evaluation rich in information for precise decision.

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