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And Scientific Research

University of Diyala

College of Medicine



Statistical Study Of Breast Cancer In Diyala Of Iraq

**Submitted to the council of the College of Medicine, Diyala University, In
Partial Fulfillment of Requirements for the Bachelor Degree in Medicine**

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Abstract

Background

Breast cancer is the second leading cause of cancer deaths among women. The development of breast cancer is a multi-step process involving multiple cell types, and its prevention remains challenging in the world. Early diagnosis of breast cancer is one of the best approaches to prevent this disease. In some developed countries, the 5-year relative survival rate of breast cancer patients is above 80% due to early prevention. In the recent decade, great progress has been made in the understanding of breast cancer as well as in the development of preventative methods. The pathogenesis and tumor drug-resistant mechanisms are revealed by discovering breast cancer stem cells, and many genes are found related to breast cancer. Currently, people have more drug options for the chemoprevention of breast cancer, while biological prevention has been recently developed to improve patients' quality of life. In this review, we will summarize key studies of pathogenesis, related genes, risk factors and preventative methods on breast cancer over the past years. These findings represent a small step in the long fight against breast cancer.

Sample and methods:

A sample of 50 people was collected randomly. We collected the data using prepared written questionnaire.

Result :

36% of the study sample was age between 45 to 54 years and 62% live in rural , 74% were married , and all of them were Muslims . 62% Of study sample has nipple retraction , 60% has nipple discharge liquid , 60% has redness and swelling of the breast , 46% has breast warmth and itching , 90% asymmetry of the breast . while the risk factors was 84% high fat diet , 54% long term use of estrogen drug . 0% has organ transplantation . the treatment was 96% chemotherapy , 74% surgery , 66% hormone therapy , 60 % radiation , 10% immune therapy .

Keywords:

Statistical Study , breast cancer , diyala.

Introduction

Cancer

Cancer is a cellular disease. Cells are the basic structure of the human body. They form tissues and organs. The body has been doing new cells that help us grow, replace worn tissue and heal damage. Normally, cells multiply and die in an orderly fashion, so each new cell replaces lost cells. However, sometimes the cells become abnormal and keep growing. These abnormal cells can turn into cancer. In solid cancers such as breast cancer, abnormal cells form a mass or lump called a tumor. For some types of cancer, such as leukemia, abnormal cells build up in the blood⁽¹⁾⁽²⁾.

Breast

The breasts rest on the upper ribs and the large pectoral muscles. They cover the area from the collarbone (clavicle) to the armpit (underarm), to the sternum. Some breast tissue extending into the underarm is also called the axillary tail. Female breasts are mainly composed of:

- Lobes – Each breast has 12-20 sections called lobes
- Lobules – each contains glands that produce milk;

These mammary glands are called lobules or glandular tissue

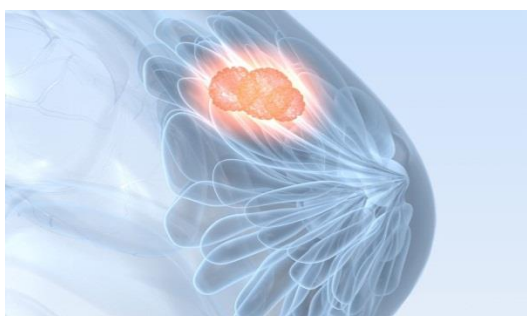
- Tubes – lobes and lobules connected by thin tubes
- Channels; milk ducts that carry milk to the nipple during breastfeeding

- Fatty/fibrous tissue – all breasts contain some fatty or fibrous tissue (including connective tissue called the stroma), regardless of its size.

Most young women have denser or larger breasts because they contain more lobules than fat. Male breasts have ducts and are greasy/fibrous. They contain no or only a few lobes and lobules⁽¹⁾⁽²⁾.

Breast cancer

Breast cancer is an abnormal growth of cells in the breast. It usually begins in the lining of the breast ducts or lobules and can grow into malignant (cancerous) tumors. Most breast cancers are detected if they are invasive. This means the cancer has spread from the mammary ducts or lobules into the surrounding breast tissue. Invasive breast cancer can be early, locally advanced, or advanced (transfer). Advanced breast cancer is when cancer cells have spread (metastasize) outside the breast to other parts of the body⁽¹⁾⁽²⁾.



Epidemiology

Malignant tumors are the largest burden globally, according to the World Health Organization women, an estimated 107.8 million (DALYs), of which 19.6 million DALYs were caused by breast cancer⁽³⁾. Breast cancer is the most common the number of newly diagnosed cancers in women worldwide was 2.26 million [95% UI, 2.24-2.79 million]. 2020 case⁽⁴⁾. Breast cancer alone is estimated to account for 29% of cases in the U.S.

All new cancers in women⁽⁵⁾. GLOBOCAN data for 2018 shows this in an age-normalized way breast cancer incidence rate (ASIR) vs. Human Development Index (HDI)⁽⁶⁾. According to 2020 data, ASIR is the highest countries with a very high HDI (75.6 per 100,000 people), while countries with a moderate HDI are more than 200% lower and low HDI countries (27.8 per 100,000 and 36.1 per 100,000, respectively)⁽⁴⁾.

Breast cancer is not only the most common cancer, but also the most common cause of cancer Global female deaths. Breast cancer kills 684,996 people worldwide [95% UI, 675,493–694,633] The age-adjusted rate was 13.6/100,000⁽⁴⁾. Although sick

Developed regions have the highest rates, with countries in Asia and Africa accounting for 63% all-cause mortality in 2020⁽⁴⁾. Most women with breast cancer in high-income countries Will survive most low-income and many middle-income women the opposite is the case Country⁽⁷⁾. Incidence rate (MIR) of breast cancer mortality in 2020 is a representative indicator

The global 5-year survival rate⁽⁸⁾ is 0.30⁽⁴⁾. Considering the clinical In places with developed medical care (Hong Kong, Singapore, Turkey) had a 5-year survival rate of 89.6% for localized cancer and 75.4% for localized cancer. Less than Survival in developed countries (Costa Rica, India, Philippines, Saudi Arabia, Thailand) The incidences of localized and regional breast cancer were 76.3% and 47.4%, respectively⁽⁹⁾. Breast cancer incidence and mortality have increased over the past three decades. Breast cancer incidence more than doubled in 60/102 countries between 1990 and 2016 (e.g. Afghanistan, Philippines, Brazil, Argentina) while 43/102 double the number of deaths Countries (e.g. Yemen, Paraguay, Libya, Saudi Arabia)⁽¹⁰⁾. Current forecasts suggest that By 2030, 2.7 million new cases will be diagnosed globally each year, The death toll was 870,000⁽¹¹⁾. In low- and middle-income countries Breast cancer rates expected to continue to increase due to Westernization Lifestyle (eg, delayed pregnancy, reduced breastfeeding, early age at menarche, lack ofnPhysical activity and poor diet), better cancer registry and cancer detection⁽¹²⁾.

Causes of breast CA

We don't know what causes every case of breast cancer. But we know a lot Risk factors for these types of cancer (Breast Cancer Risk Factors You Can't Change) .For example, lifestyle-related risks Factors like things like diet and exercise level can increase your chances Breast cancer, but it's unclear how some of these risk factors work Cause normal

cells to become cancerous. Hormones also seem to play a role in many ways Breast cancer cases, but how this occurs is not fully understood. We know normal breast cells can become cancerous with changes or cancer Gene mutation. But only about one in ten (10%) breast cancers are associated with known breast cancer an abnormal gene passed (inherited) from a parent. Many genes do not yet So women with a family history of breast cancer may have inherited it, finds abnormal Genes Not Shown in Genetic Tests . Most breast cancers (approx90%) are caused by acquired (non-inherited) genetic changes not yet present Sure⁽¹³⁾⁽¹⁴⁾⁽¹⁵⁾⁽¹⁶⁾.

Signs and symptoms of breast CA

Breast cancer typically has no symptoms when the tumor is small and most easily treated, which is why screening is important for early detection. The most common physical sign is a painless lump. Sometimes breast cancer spreads to underarm lymph nodes and causes a lump or swelling, even before the original breast tumor is large enough to be felt. Less common signs and symptoms include breast pain or heaviness; persistent changes, such as swelling, thickening, or redness of the skin; and nipple changes, such as spontaneous discharge (especially if bloody), scaliness, or retraction. Any persistent change in the breast should be evaluated by a physician.



Risk factors for breast CA ⁽¹⁷⁾⁽¹⁸⁾⁽¹⁹⁾

- Family history
- Delayed puberty
- Delayed menarche
- Delayed marriage age
- Lactation failure

- Late menopause age
- Hormone replacement therapy
- Use of contraceptive
- Obesity

- Alcohol consumption
- Smoking
- Unbalanced diet
- Environment toxicants
- No physical activity

Types of breast cancer

In situ

Previous ductal carcinoma in situ (DCIS) and lobular carcinoma. Carcinoma in situ (LCIS), also called lobular neoplasia, There are two main types of breast cancer in situ considered. However, LCIS is generally considered a benign condition linked to increased risk of breast cancer, but not the likelihood of being an invasive cancer, which is removed from latest edition of AJCC Breast Cancer staging system⁽²⁰⁾. On the other hand, DCIS is the precursor invasive carcinoma, although not all DCIS progress. Inside in fact, sometimes DCIS grows very slowly even without it treatment, it does not harm a woman's health. Long studies have found that only 20%-53% of women have untreated DCIS eventually diagnosed as invasive Breast cancer⁽²¹⁾⁽²²⁾⁽²³⁾. premenopausal DCIS patients diagnosis or its DCIS confirmed by palpation greater risk of being diagnosed with future intrusions breast cancer⁽²⁴⁾⁽²⁵⁾. During 2012-2016, DCIS represented 16% Of all breast cancer diagnoses⁽²⁶⁾.

Invasive

Most (81%) breast cancers are invasive or infiltrating, This means that abnormal cells have broken through the walls of the glands or ducts from which they arise and Grow into the surrounding breast tissue. Although chest cancer has historically been referred to as a single disease, It is now considered a group of disorders including four major molecular subtypes and at least 21 different subtypes Histological subtype (the type of tissue in which the cancer arose Origin), translated into risk factors, introduced, Treatment response and outcome.

Histological subtype

Histology is based on the size, shape, and arrangement of tissues breast cancer cells. More than 75% of invasive breasts Cancer is now classified histologically as "No Specific Cancer" Type", historically known as "ductal" carcinoma⁽²⁶⁾. Most common specific histologic subtype is invasive lobular Carcinoma accounts for about 15% of invasive breasts Cancer⁽²⁶⁾. Tubular, mucinous, cribriform, and papillary carcinoma is a rare subtype of breast cancer often associated with favorable forecasts⁽²⁷⁾. However, inflammatory breast cancer is rare invasive breast cancer, which is characterized by swelling and redness of the breast skin.

Molecular subtype

Molecular subtype of breast cancer identified Through gene expression analysis, an expensive and complicated process that is not currently standard clinical practice. However, these subtypes can similar to clinical routine methods biomarker evaluation (ER, PR, HER2, etc.) Sometimes others Hormone receptor positive (HR+). Cancers are those that test positive for ER or PR or both. Information on grade and proliferation (cell rate Division) are also sometimes used to assign subtypes. The four main molecular subtypes are described below. It is worth noting that there is some overlap between Curriculum and clinical methods are not fully Compliant with Molecular Breast Cancer⁽²⁸⁾.

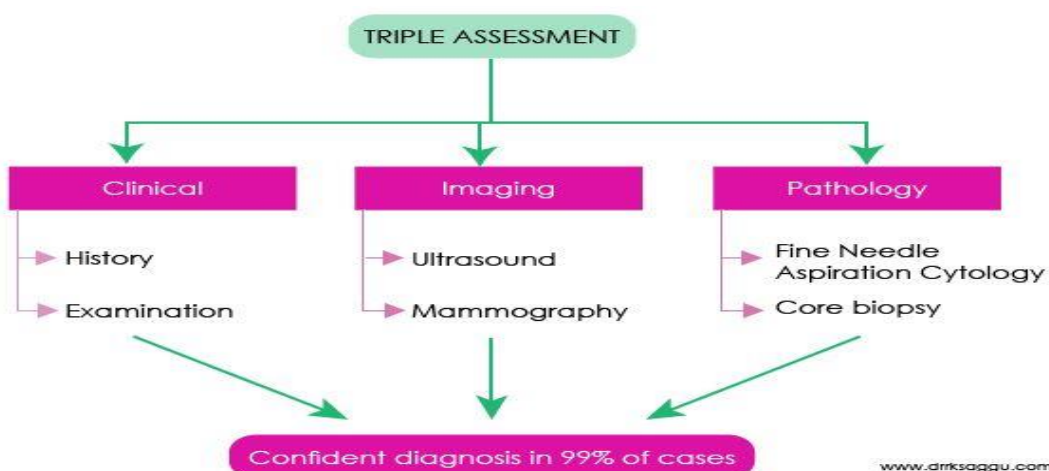
Luminal A (HR+/HER2-): This is the most common type Breast cancer and tends to grow more slowly and is less aggressive than other subtypes. Lumen A tumors associated with most favorable prognosis Partly because they usually respond to hormones treatment⁽²⁹⁾⁽³⁰⁾.

Luminal B (HR+/HER2+): It's Not Just HR+ As always, the initial clinical features of this subtype are HER2 positive, but recently defined for Ki67 protein (an indicator lots of actively dividing cells) and/or HER2. Luminal B breast cancers are usually graded higher than Lumen A, therefore associated with poorer results⁽²⁹⁾⁽³⁰⁾.

Basal-like (HR-/HER2-): These types of cancer are also named Triple negative because they are ER-, PR- and HER2-. That Most (approximately 75%) cases of triple-negative breast cancer Enter the basal-like subtype defined by gene expression profiling⁽³¹⁾. Triple-negative breast cancer have poorer prognosis than other subtypes, partly due to treatment progress lags behind other molecular subtypes⁽³²⁾⁽³³⁾. These cancers are twice as likely to occur in black women compared with white women in the United States, more Common in premenopausal women and BRCA1 gene mutation⁽³⁴⁾.

HER2-enriched (HR-/HER2+): Formerly this subtype worst prognosis; however, the widespread use of targeted therapies for HER2+ cancers has substantially improved outcomes for these patients⁽³²⁾⁽³⁵⁾.

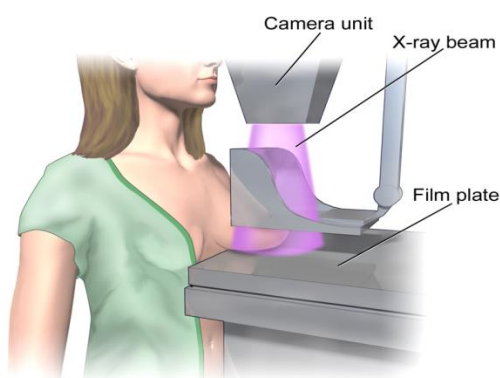
Triple Assessment



Investigation for breast Symptoms

1) mammography

Mammography is a study used to examine breast tissue to detect abnormalities. Compounds that may indicate cancer or other breast disorders⁽³⁶⁾. This technique Sensitivity in the recommended population was as high as 85%. The main thing is mammogram Uses low-dose X-rays to create images of the tissues inside the breast⁽³⁷⁾. Form in the image, the breast is compressed by two plates to reduce scatter Obtain better images without using high X-ray doses⁽³⁷⁾, where tissue changes can be shown as white areas on gray contrast⁽³⁷⁾. On average, the total radiation dose from a typical 2-view mammogram is approximately 0.4 per breast⁽³⁷⁾. Some work has focused on processing digital mammograms to detect the most common symptoms that might indicate cancer: calcifications or masses⁽³⁸⁾. Traditionally, specialists look for areas that have a different appearance (size, shape, contrast, edges, or spots of light) from normal tissue. This task can be automated using segmentation algorithms⁽³⁹⁾⁽⁴⁰⁾. It is suggested where some neural network experiments have been done⁽³⁸⁾⁽⁴¹⁾⁽⁴²⁾, to provide Encouraging results. More recently, breast tomosynthesis (BT) and contrast-enhanced mammography (CEM) have been proposed as improvements to traditional digital mammography. The former is a 3D breast reconstruction that further improves image resolution, while the latter is enhanced by injection of a contrast agent; in this way, abnormal anatomy and vascular definition are revealed. In this Sense, some improvements when dealing with breast-dense tissue patients are obtained; Yet, the detection of clustered micro calcifications is still an issue⁽³⁶⁾; on the other hand, additional screening tests are required to determine if the abnormality detected by CEM is Cancer or not, besides of requiring more expensive equipment.

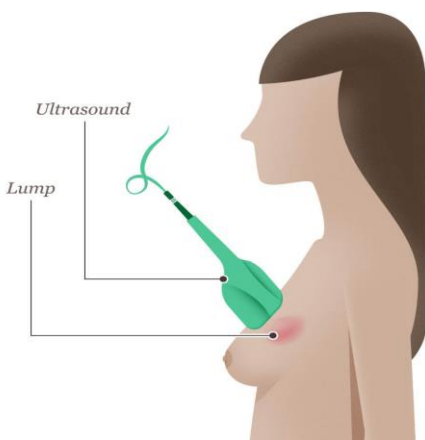


Mammogram

2) ultrasound

Ultrasound is a non-invasive and non-radiative technique that uses sound waves Create an image of the organ, in this case the breast, to see how its shape changes. Create to acquire the image, the transducer emits high-frequency sound waves (>20 kHz) and measures them Reflect⁽³⁶⁾. Forming images using the sound of waves reflected from within Organize. Ultrasound is used for three purposes: (1) Evaluation and determination

of abnormalities Condition, meant to help the doctor when the abnormal mass is solid, which may require further Check, fluid filled, or both; (2) Use as a help screen tool If the patient has dense breasts and mammography is not reliable enough,(3) or As a guide for biopsy of suspected abnormalities⁽³⁶⁾. Several computerized Diagnostic (CAD) systems that analyze ultrasound images have been proposed⁽⁴³⁾. One the point they need to determine is the resolution of the image⁽⁴⁴⁾ using Specific-designed filters. Another modification proposed is the utilization of micro-bubbles That are injected into the abnormalities detected at first sight⁽⁴⁵⁾.It should be noticed that the mass tends to stay in its position when compressed, i.e., They do not displace. Elastography is the technique that is employed to measure the tumor Displacement when compressed using a special transducer⁽⁴⁶⁾. These developments have Led to discover masses that usually require performing a biopsy to determine the mass Nature, which delay the diagnosis confirmation⁽³⁶⁾⁽⁴⁶⁾.



3) MRI

Breast MRI (BMRI) uses magnetic fields and radio waves to create detailed images from the chest. A 1.5 T magnet is usually used with a contrast agent (usually gadolinium).Generate images of two breasts⁽⁴⁷⁾. To record images, the patient is in the Prone position minimizes breathing motion and allows expansion Breast tissue⁽³⁶⁾⁽⁴⁷⁾. When the magnet is turned on, the magnetic field becomes transient Rearranges the water molecules; so when radio waves are applied, the emitted radiation is Induction via a specially designed coil located at the chest position Trapped radiation in electrical signals. The location of the coil must ensure sufficient field strength.View from the clavicle to the inframammary fold, including the axilla⁽³⁶⁾.The main purpose of these images is to assess breast symmetry and breast Possible changes in parenchymal organization, as these changes Possibly malignant lesion. In general, malignant lesions have irregular borders(or asymmetrical), while benign ones usually have a round or oval geometry Has well-defined edges (symmetry). In order to provide the best results, it is necessary Removal of homogeneous fat around the breast and parenchyma as fat leaks out Potentially uninterpretable images, especially to detect subtle lesions⁽³⁶⁾⁽⁴⁷⁾.On the other hand, one problem with BMRI is false positives (specificity) Guess the technique can detect small masses (lesions smaller than 5 mm in size) Are benign⁽³⁶⁾⁽⁴⁷⁾. To alleviate

the above problems, nanomaterials have been adopted Developed so they remain in cancerous masses rather than benign ones⁽⁴⁸⁾ as well as Contrast agents⁽⁴⁹⁾.



4) Other approaches

Recently, microwave radiation has been employed as an alternative to obtain information about the breast tissue. The microwaves, whose frequency range varies from 1 To 20 GHz, are applied to the breast and the reflected waves are measured using specific-Designed antennas. To have the best possible results, some works propose that the tissue must be immersed in a liquid⁽⁵⁰⁾. In this sense, some works have proposed acquisition Systems that deal with this issue⁽⁵¹⁾⁽⁵²⁾. When it is necessary to perform a biopsy to confirm, images from the cells that form the abnormalities are obtained using among other techniques, the fine needle aspiration Citology (FNAC), core or excisional biopsy. Once the cell images are captured, an image Processing technique is applied in order to detect the differences between normal and malignant cells, which are classified using modern strategies⁽⁵³⁾⁽⁵⁴⁾ such as neural networks, Probabilistic-based algorithms and association rules coupled with neural networks. It should be pointed out that other alternatives for imaging are employed such as Computed Tomography (CT) or Positron Emission Tomography (PET). The former employ X-rays to form images from the chest using different angles; using image processing and Reconstruction algorithms, a 3D image of the chest (including the breasts) is obtained⁽⁵⁵⁾⁽⁵⁶⁾; On the other hand, the latter uses a small amount of tracer, that is a specific-designed sugar With radioactive properties known as fluorodeoxyglucose-18. The main idea of using this Type of sugar is that cancer cells have an increased consume of glucose compared with the Normal cells; in this sense, the tracer sticks in the zones where there is an increased glucose Consume⁽⁵⁷⁾⁽⁵⁸⁾. It is worth noticing that these techniques are recommended to determine The cancer stage rather than first-line diagnosis scheme⁽³⁶⁾⁽⁵⁹⁾. In this way, they complement the three main techniques to provide more information from the tissues surrounding The breasts⁽⁵⁹⁾.

Stages of breast CA⁽⁶⁰⁾⁽⁶¹⁾⁽⁶²⁾⁽⁶³⁾⁽⁶⁴⁾

Stage 0 ■ Very early breast cancer or preinvasive cancer. This type of cancer has NOT spread within or outside of your breast (also called in situ or noninvasive cancer).

Stage I ■ Tumor smaller than 2 cm. (1 inch*). No cancer is found in lymph nodes in the armpit, or outside the breast.

Stage II ■ Tumor smaller than 2 cm. (1 inch). Cancer is found in the lymph nodes in the armpit, OR

■ Tumor between 2 and 5 cm. (1 and 2 inches). Cancer may or may not be found in the lymph nodes in the armpit, OR

■ Tumor larger than 5 cm. (2 inches). Cancer is not found in the lymph nodes in the armpit.

Stage III ■ Tumor smaller than 5 cm. (2 inches) with cancer also in the lymph nodes that are stuck together, OR

■ Tumor larger than 5 cm. (2 inches), OR cancer is attached to other parts of the breast area including the chest wall, ribs, and muscles, OR

■ Inflammatory breast cancer. In this rare type of cancer, the skin of the breast is red and swollen.

Stage IV ■ Tumor has spread to other parts of the body, such as the bones, lungs, liver, or brain.

Prognosis of breast cancer⁽⁶⁵⁾

The best indicators of likely prognosis in breast cancer remain Tumour size, grade and lymph node status; however, it is realised that some large tumours will remain confined to the breast For decades, whereas some very small tumours are incurable At diagnosis. Hence, the prognosis of a cancer depends not On its chronological age but on its invasive and metastatic Potential. In an attempt to define which tumours will behave Aggressively, and thus require early systemic treatment, a host Of prognostic factors have been described. These include The histological grade of the tumour, hormone receptor status, measures of tumour proliferation such as Ki-67, growth Factor analysis and oncogene or oncogene product measurements. Many others are under investigation but have proved Of little practical value in patient management.

Treatment Strategies of breast CA

1) surgery

There are two major types of surgical procedures enabling the removal of breast cancerous tissues and those include (1) breast-conserving surgery (BCS) and (2)

mastectomy. BCS—also called partial/segmental mastectomy, lumpectomy, wide local excision, or quadrantectomy—enables the removal of the cancerous tissue with simultaneous preservation of intact breast tissue often combined with plastic surgery technics called oncoplasty. Mastectomy is a complete removal of the breast and is often associated with immediately breast reconstruction. The removal of affected lymph nodes involves sentinel lymph node biopsy (SLNB) and axillary lymph node dissection (ALND). Even though BCS seems to be highly more beneficial for patients, those who were treated with this technique often show a tendency for a further need for a complete mastectomy⁽⁶⁶⁾. However, usage of BCS is mostly related to significantly better cosmetic outcomes, lowered psychological burden of a patient, as well as reduced number of postoperative complications⁽⁶⁷⁾. Guidelines of the European Society for Medical Oncology (ESMO) for patients with early breast cancer make the choice of therapy dependent to tumor size, feasibility of surgery, clinical phenotype, and patient's willingness to preserve the breast⁽⁶⁸⁾.

2) chemotherapy

Chemotherapy is a systemic treatment of BC and might be either neoadjuvant or adjuvant. Choosing the most appropriate one is individualized according to the characteristics of the breast tumor; chemotherapy might also be used in the secondary breast cancer. Neoadjuvant chemotherapy is used for locally advanced BC, inflammatory breast cancers, for down staging large tumors to allow BCS or in small tumors with worse prognostics molecular subtypes (HER2 or TNBC) which can help to identify prognostics and predictive factors of response and can be provided intravenously or orally. Currently, treatment includes a simultaneous application of schemes 2–3 of the following drugs—carboplatin, cyclophosphamide, 5-fluorouracil/capecitabine, taxanes (paclitaxel, docetaxel), and anthracyclines (doxorubicin, epirubicin). The choice of the proper drug is of major importance since different molecular breast cancer subtypes respond differently to preoperative chemotherapy⁽⁶⁹⁾. Preoperative chemotherapy is comparably effective to postoperative chemotherapy⁽⁷⁰⁾. Even though chemotherapy is considered to be effective, its usage very often leads to several side effects including hair loss, nausea/vomiting, diarrhea, mouth sores, fatigue, increased susceptibility to infections, bone marrow suppression, combined with leucopenia, anemia, easier bruising or bleeding; other less frequent side effects include cardiomyopathy, neuropathy, hand-foot syndrome, impaired mental functions. In younger women, disruptions of the menstrual cycle and fertility issues might also appear. Special form of chemotherapy is electrochemotherapy which can be used in patients with breast cancer that has spread to the skin, however, it is still quite uncommon and not available in most clinics.

3) Radiation Therapy

Radiotherapy is local treatment of BC, typically provided after surgery and/or chemotherapy. It is performed to ensure that all of the cancerous cells remain destroyed,

minimizing the possibility of breast cancer recurrence. Further, radiation therapy is favorable in the case of metastatic or unresectable breast cancer⁽⁷¹⁾. Choice of the type of radiation therapy depends on previous type of surgery or specific clinical situation; most common techniques include breast radiotherapy (always applied after BC), chest-wall radiotherapy (usually after mastectomy), and 'breast boost' (a boost of high-dose radiotherapy to the place of tumor bed as a complement of breast radiotherapy after BCS). Regarding breast radiotherapy specifically, several types are distinguished including (1) intraoperative radiation therapy (IORT) (2) 3D-conformal radiotherapy (3D-CRT) (3) intensity-modulated radiotherapy (IMRT) (4) brachytherapy—which refers to internal radiation in contrast to other above-mentioned techniques. Irritation and darkening of the skin exposed to radiation, fatigue, and lymphedema are one of the most common side effects of radiation therapy applied in breast cancer patients. Nonetheless, radiation therapy is significantly associated with the improvement of the overall survival rates of patients and lowered risk of recurrence⁽⁷²⁾.

4) Endocrinal (Hormonal) Therapy

Endocrinal therapy might be used either as a neoadjuvant or adjuvant therapy in patients with Luminal–molecular subtype of BC; it is effective in cases of breast cancer recurrence or metastasis. Since the expression of ERs, a very frequent phenomenon in breast cancer patients, its blockage via hormonal therapy is commonly used as one of the potential treatment modalities. Endocrinal therapy aims to lower the estrogen levels or prevents breast cancer cells to be stimulated by estrogen. Drugs that block ERs include selective estrogen receptor modulators (SERMs) (tamoxifen, toremifene) and selective estrogen receptor degraders (SERDs) (fulvestrant) while treatments that aim to lower the estrogen levels include aromatase inhibitors (AIs) (letrozole, anastrozole, exemestane)⁽⁷³⁾⁽⁷⁴⁾. In the case of pre-menopausal women, ovarian suppression induced by oophorectomy, luteinizing hormone-releasing hormone analogs, or several chemotherapy drugs, are also effective in lowering estrogen levels⁽⁷⁵⁾. However, approximately 50% of hormone receptor-positive breast cancer become progressively resistant to hormonal therapy during such treatment⁽⁷⁶⁾. Endocrinal therapy combined with chemotherapy is associated with the reduction of mortality rates amongst breast cancer patients⁽⁷⁷⁾.

5) Biological Therapy

Biological therapy (targeted therapy) can be provided at every stage of breast therapy—before surgery as neoadjuvant therapy or after surgery as adjuvant therapy. Biological therapy is quite common in HER2-positive breast cancer patients; major drugs include trastuzumab, pertuzumab, trastuzumab deruxtecan, lapatinib, and neratinib⁽⁷⁸⁾⁽⁷⁹⁾. Further, the efficacy of angiogenesis inhibitors such as a recombinant humanized monoclonal anti-VEGF antibody (rhuMAb VEGF) or bevacizumab are continuously investigated⁽⁸⁰⁾. In the case of Luminal, HER2-negative breast cancer, pre-menopausal women more often receive everolimus -TOR inhibitor with exemestane while

postmenopausal women often receive CDK 4–6 inhibitor palbociclib or ribociclib simultaneously, combined with hormonal therapy⁽⁸¹⁾⁽⁸²⁾. Two penultimate drugs along with abemaciclib and everolimus can also be used in HER2-negative and estrogen-positive breast cancer⁽⁸³⁾⁽⁸⁴⁾. Atezolizumab is approved in triple-negative breast cancer, while denosumab is approved in case of metastasis to the bones⁽⁸⁵⁾⁽⁸⁶⁾.

Carcinoma of the male breast

Carcinoma of the male breast accounts for less than 0.5% of all cases of breast cancer. The known predisposing causes include gynecomastia and excess endogenous or exogenous oestrogen. As in the female it tends to present as a lump and is most commonly an infiltrating ductal carcinoma⁽⁶⁵⁾.

Treatment

Stage for stage the treatment is the same as for carcinoma in the female breast and prognosis depends upon stage at presentation. Adequate local excision, because of the small size of the breast, should always be with a 'mastectomy'⁽⁶⁵⁾.

Subjective and methods.

Cross sectional study , done in Baqubah teaching hospitals from 1st November 2022 to 31th February 2023. Fifty patient were collected randomly . age group ≥ 25 years . We conducted the study using a prepared written questionnaire. We asked them questions contain demographic characteristics questions to study participants and breast cancer awareness questions .

Statistical analysis

The data collected and analysis using laptop and use Statistical package for social sciences (SPSS) version 26 . We used the frequencies in the expression about qualitative data.

Result

Table 1: demographic characteristics of study participants .

Variable	Frequency	Percentage
Age group (years)		
25-34	4	8%
35-44	8	16%
45-54	18	36%
55-64	14	28%
≥ 60	6	12%
Location		
Urban	19	38%
Rural	31	62%
Marital status		
Married	37	74%
Single	6	12%
Widowed	5	10%
Divorced	2	4%
Occupation		
Peasant	0	0%
Worker	7	14%
Medical staff	0	0%
Other	43	86%
Family history of breast cancer		
Yes	9	18%
No	41	82%
Smoking		
Yes	1	2%

No	49	98%
Religion		
Islamic	50	100%
Christianity	0	0%
Other	0	0%
Stage period time		
11 years	10	20%
12 years	24	48%
13years	16	32%
Surgery type		
Partial mastectomy	17	34%
Total mastectomy	20	40%
No surgery	13	26%

This table show All 50 participants returned their completed questionnaire. The age were (36%) between 45 and 54 years old, while 28% were between 55 to 64 years , 62% of them were live in rural while 38% live in urban , 74% were married , all patient were Muslims and 82% of them don't have family history of breast cancer , the majority of them were not smoking (98%) .

Table 2: breast cancer awareness and risk perception .

Variable	Frequency	Percentage
Do you know breast cancer?		
Yes	50	100%
No	0	0%
Do you think screening is helpful for early detection of breast cancer ?		
Yes	27	54%
No	23	46%
Do you think the early detection of breast cancer can improve survival ?		
Yes	28	56%

No	22	44%
Breast cancer is the most cancer in women?		
Yes	41	82%
No	9	18%
Don't know	0	0%
Breast cancer occur more commonly in old people ?		
Yes	25	50%
No	10	20%
Don't know	15	30%
Breast cancer can be inherited ?		
Yes	32	64%
No	0	0%
Don't know	18	36%
Breast cancer usually present as a painless?		
Yes	50	100%
No	0	0%
Don't know	0	0%
Nipple retraction		
Yes	31	62%
No	19	38%
Don't know	0	0%
Nipple discharge liquid ?		
Yes	30	60%
No	20	40%
Don't know	0	0%
Redness or swelling of the breast ?		
Yes	30	60%
No	10	20%
Don't know	10	20%

Breast warmth and itching?		
Yes	23	46%
No	27	54%
Don't know	0	0%
Asymmetry of breast ?		
Yes	45	90%
No	5	10%
Don't know	0	0%
High fat diets ?		
Yes	42	84%
No	8	16%
Don't know	0	0%
Long term use of estrogen drug ?		
Yes	27	54%
No	23	46%
Don't know	0	0%
Do you have an organ transplantation?		
Yes	0	0%
No	50	100%
Don't know	0	0%
Type breast cancer treatment		
Surgery	37	74%
chemotherapy	48	96%
Hormone therapy	33	66%
Biological targeted therapy	3	6%
Immune therapy	5	10%
Radiation	30	60%

This table show that all patient have knowbreast cancer , 54% of them think screening is helpful for early detection of breast cancer while 56% of them think early detection of breast cancer can improve survival , 82% of them think Breast cancer is the most cancer in women , 64% think Breast cancer can be inherited ,All of the think Breast cancer usually present as a painless , 62% of patient has nipple retraction while60% have nipple discharge liquid and swelling , 90 % asymmetry of breast , 84 % high fat diet , 54 % long term of estrogen drug . All pateint haven't organ transplantation. The majority of treatment was chemotherapy (96%) and surgery (74%).

Discussion

This study though has demonstrated insufficient knowledge about the breast cancer .

The majority of the sample was age between 45-54 (36%), 55-64 (28%) 35-44 (16%), (12%) were ≥ 65 years and finally the age 25- 34 (8%). 62% live in rural while 38% live in urban . the majority of them are married (74%) . 18% of the sample were have family history of breast cancer . all of them Muslims and not smoking and this findings agree with study done in India by Dubey et al .(87)

Total mastectomy done 40% while 34%partial mastectomy and 26% don't make surgery and this consist with other findings as paul et al .(88)

All of the study sample(100%)were know breast cancer but they have insufficient knowledge of this disease when we ask them about the screening is helping for early detection of breast cancer 46% there answer was no , and 44% answer no when we ask them about early detection of breast cancer can improve survival and this agree the study vogel et al.(89)

30% of them say don't know when ask them breast cancer occur more commonly in old people and 20% say no . 36% say don't know when we ask them breast cancer can be inherited . this mean that their knowledge about risk factor not enough this is disagree with Afriyie et al.(90) because the study sample were health professionals .

The symptoms 62% has nipple retardation , 60% nipple discharge liquid , 60 % redness and swelling of the breast , 46 % breast warmth and itching , 90 % has asymmetry of breast this agree the findings different studies .(91,92)

The treatment was 98% of patient is chemotherapy , 74% surgery , 66% hormone therapy , 60% radiation , 10% immune therapy and this consists with findings of DeSantis et al.(93)

Conclusions

We conclude that the breast cancer is most common cancer in women and patient were insufficient knowledge and awareness perception .

Recommendation.

- 1- We recommended more study on breast cancer.**
- 2- Encourage the women to visit hospitals to screening the breast cancer and this will make the cure is possible**
- 3- Increase awareness and risk perception by making lectures and interview in TV and social media.**

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