

What is inflammatory breast cancer (IBC)?

It is an aggressive type of invasive breast cancer that is often arises from the ducts of the breast. Although “inflammatory” is part of its name, it does not mean the cancer or its appearance is caused by injuries or infections. As the cancer progresses, the tumor cells increase to a level where they start to block off the lymphatic vessels that are within the skin.² This backup of lymph causes the typical inflammatory signs and symptoms such as redness, swelling, pain, and warmth. IBC tends to develop and invade nearby vessels very quickly.⁴

When IBC develops in a normal breast, it is known as primary IBC. Secondary IBC is when it arises from a breast that had been previously diagnosed with non-inflammatory primary breast cancer.³ The recurrence often happens in breasts where mastectomy was done.

How are the diagnostic criteria for IBC?

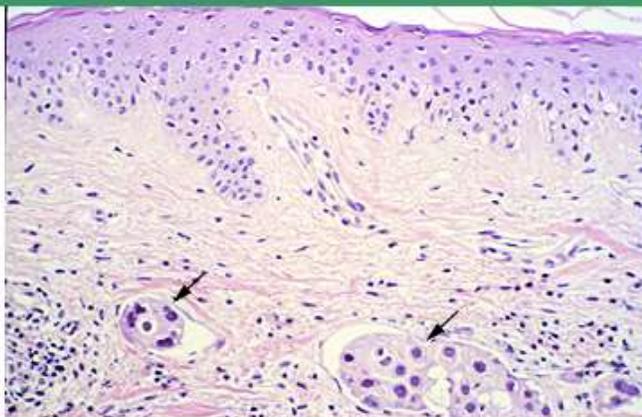
Based on international expert panel consensus:²

- 1.) Rapid onset of breast erythema, edema and/or peau d'orange, and/or warm breast, with or without an underlying palpable mass
- 2.) Duration of history no more than six months
- 3.) Erythema occupying at least 1/3 of the breast
- 4.) Pathologic confirmation of invasive carcinoma

What does the cancer look like under the microscope?

One classic finding is evidence of cancer cells invasion of the skin lymphatic vessels, but keep in mind that this is only identified about 75% of the time due to sampling errors.³ In addition, patients with other types of breast cancers or conditions can sometimes have this.

Inflammatory carcinoma of the breast



The skin of the breast with an inflammatory carcinoma shows dermal lymphatic invasion by carcinoma cells (arrows).

How common is IBC?

IBC accounts for about 1-5% of all breast cancers in the U.S.⁴ The median age of diagnosis is 57 years old for IBC as opposed to 62 years old for other locally advanced breast cancers for women. In men, the median age is higher at 66.5 years old. Incidence is higher among African American compared to Caucasian, but there is evidence that incidence of the latter group is rising. IBC is more common in women who are overweight or obese.² Risk factors for any type of breast cancers also increase the risk of IBC. This emphasize the importance of following all of the recommended guideline for breast cancer screening especially for individuals who have risk factors or in the higher risk group.

How do people with IBC present?

Patient may have any combination of breast firmness, enlargement, tenderness, sensations of heaviness, burning, and itching.⁷ The skin overlying the affected area is warm and thickened with a peau d'orange (skin of an orange) appearance. Color of the skin can range from light pink to dark purple which can sometimes look like a bruise. It is not common to feel a mass underneath. Possible nipple changes include retraction, flattening, crusting, or blistering. Lymph node involvement is typical at presentation due to the rapidly progressive nature of the disease. Furthermore, distant metastases occur in about 1/3 of women at presentation.²

Classic appearance of IBC¹



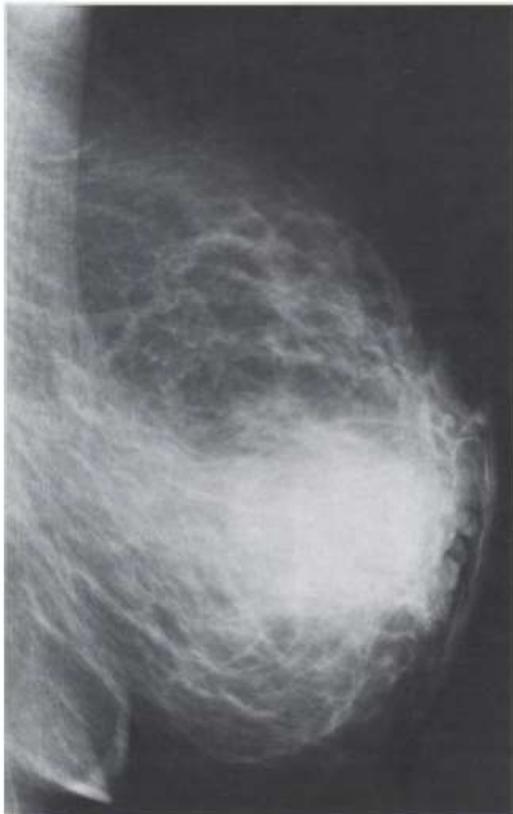
Fig. 3.1 Inflammatory carcinoma of the right breast. Breast shows erythema, peau d'orange skin, and overall increased size

What other diseases can have a similar presentation?

Lactational mastitis can also present with breast tenderness and redness in breastfeeding women due to bacteria entering through the nipples. Any infection of the skin, dermatitis, or diseases with skin manifestation such as syphilis can present with a similar picture.¹ Infections can lead to breast abscess formation which that can be felt as a mass. It is important to see your doctor when new rashes or skin changes appear, because it can represent a number of different diseases and early detection of IBC can have a significant impact on treatment and prognosis.

What are some diagnostic tests for IBC?

Diagnostic bilateral mammography may show skin thickening of the affected breast, other tissue distortion, calcification, and/or tumor mass.²



Medio-lateral oblique projection on mammography: “There is a large, 7 x 6 cm, dense retroareolar tumor with unsharp borders. It is associated with nipple retraction and skin thickening over the areola and lower portions of the breast.”⁸

Ultrasonography may be able to identify enlarged lymph nodes or breast masses if they are present and can help with biopsy. Diagnosis is typically made by core biopsy and fine needle aspiration (FNA) of suspicious lymph nodes can result in a more accurate staging.¹ Sentinel lymph node biopsy meaning removing the

first lymph node that drain from the tumor in order to determine the spread of the cancer is not recommended for IBC.⁷ This is because it does not ultimately yield better results for the patients.

The value of evaluating IBC with other imaging modalities such as computed tomography (CT), positron emission tomography (PET), or magnetic resonance imaging (MRI) is still being investigated.² However, CT and a bone scan should be done to look for metastases since this is such an aggressive disease. Your doctor will likely order some blood tests including but not limited to comprehensive blood count, electrolytes, liver function tests, and alkaline phosphatase.

How is IBC staged?

TNM is a popular system for staging cancers.

T stands for tumor, and it represents the size of the tumor.

N stands for node, and it represents involvement of nearby lymph nodes.

M stands for metastasis, and it represents the spread of the cancer.

All inflammatory breast cancers are T4 because the cancer cells have already grown into the skin.⁵

The different levels of “N” and “M” are defined as follows:

N1: axillary lymph nodes

N2: supraclavicular or infraclavicular lymph nodes

N3: internal mammary lymph nodes (inside the chest)

M0: no metastasis

M1: has metastasis

By definition, IBC is at least stage IIIB. Stage IIIC is when there is N1 involvement with more than 10 nodes, N2, or N3. It is Stage IV if it has spread outside of breast and lymph nodes to other parts of the body such as bone, brain, liver, and lung.⁵

What are the treatment options?

A combination of neoadjuvant (chemotherapy before surgery), mastectomy, and radiation is the standard approach for treating IBC.² The duration of neoadjuvant is typically 4-6 cycles, and studies show that the class of medication anthracyclines and especially taxanes are very effective. Any IBC found to be HER2 positive should receive HER2-targeted therapy, mainly trastuzumab (Herceptin), for 1 year duration. Breast conserving surgery is against recommendation.⁵ The definitive surgery is modified radical mastectomy, which

should only be tried if all of the visible cancer can be completely resected. This is followed by radiation therapy. Postoperative chemotherapy is not typically part of the treatment plan, but adjuvant endocrine therapy such as tamoxifen and aromatase inhibitors may be considered if patient is hormone receptor-positive and clinically appropriate.

What is the prognosis?

IBC is an aggressive and rapidly progressive disease that should not be taken lightly. Five-year survival rate is about 40% as opposed to about 90% for all breast cancers.⁶ Part of the reason is that it is frequently hormone receptor negative, and so medications target these receptors do not work. Furthermore, EGFR and HER2 are overexpressed in more than half of all IBCs, which contribute to the poor prognosis.² A person's overall health, stage of disease at diagnosis, and respond to treatment also influence the outcome. Even though IBC is a serious disease, there are treatments available. Treatments tend to more effective when the disease discovered early. This underlines that importance of early detection by being mindful of how this disease presents and following current breast cancer screening guidelines.

References

- 1.) Ueno NT, Cristofanilli M. *Inflammatory Breast Cancer: An Update*. DOI 10.1007/978-94-007-3907-9. Springer. 2012.
- 2.) Taghian A, El-Ghamry MN, Merajver SD. Inflammatory breast cancer: Clinical features and treatment. *UpToDate*. Oct 5, 2012.
- 3.) Merajver SD. Inflammatory breast cancer: Pathology and molecular pathogenesis. *UpToDate*. Jul 25, 2013.
- 4.) Fact Sheet: Inflammatory Breast Cancer. National Cancer Institute (NCI). Access date: 2/15/2014.
 - a. <http://www.cancer.gov/cancertopics/factsheet/Sites-Types/IBC>
- 5.) Breast Cancer Treatment: Stages of Breast Cancer. National Cancer Institute (NCI). Access date: 2/13/2014.
 - a. <http://www.cancer.gov/cancertopics/pdq/treatment/breast/Patient/page2>
- 6.) Surveillance, Epidemiology, and End Results Program (SEER) Stat Fact Sheets: Breast Cancer. National Cancer Institute (NCI). Access date: 2/13/2014.
 - a. <http://seer.cancer.gov/statfacts/html/breast.html>
- 7.) Inflammatory Breast Cancer. American Cancer Society (ACS). 10/14/2013. Access date: 2/16/2014.
 - a. <http://www.cancer.org/cancer/breastcancer/moreinformation/inflammatorybreastcancer/index>
- 8.) Tabár L, Dean PB. *Teaching Atlas of Mammography*. 3rd revised and enlarged edition. New York, NY: Thieme-Stuttgart; 2001: 67.

Onyee Chan
University of Arizona College of Medicine – Phoenix
Class of 2014

Date: 2/20/2014