Inflammatory Breast Cancer in Tunisia: 20-Year Clinical and Therapeutic Outcomes

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Introduction

Inflammatory breast cancer (IBC) is a rare and highly aggressive form of locally advanced breast cancer, classified as T4d in the AJCC system. Its incidence shows marked geographic variability, reaching 5–7% of breast cancers in Tunisia and North Africa compared with less than 2% in Western countries. Diagnosis requires strict and rapid-onset clinical criteria distinguishing IBC from other T4 presentations. Despite its rarity, IBC carries a high risk of early locoregional and metastatic relapse and accounts for a disproportionate share of breast cancer mortality. Treatment relies on a multidisciplinary approach combining neoadjuvant systemic therapy, radical mastectomy, and radiotherapy. This study reports real-world epidemiologic and therapeutic data from a Tunisian high-incidence center.

Methods and Materials

From a 2004–2024 breast cancer cohort, we identified cases fulfilling AJCC/IBC-IC criteria for inflammatory breast cancer (T4d), based on rapid onset (<6 months) of erythema, edema or "*peau d'orange*" involving ≥1/3 of the breast with histologic confirmation. Initial assessment included clinical evaluation, imaging, and histology with immunohistochemistry. Patients received neoadjuvant systemic therapy, followed by mastectomy and loco-regional radiotherapy. Treatments, responses, and survival outcomes were analyzed.

Results

We collected inside a cohort of 2714 BC's, treated during 20 years, from 2002 to 2024 in Tunisia, 131 patients treated for an IBC, representing 4.8% of the hole population. Mean delay between symptoms and diagnosis was 4,6 months, varying from 3 to 6 months. Rural 59 and urban in 72 cases(figure 2). They have a median age of 45 years, varying from 27 to 67 years.. Single 21 nulliparous 14. Initial metastases were present at diagnosis in 24 patients/131. Grade 2 in 58/94 and grade 3 in 36/94. Molecular subtypes are as followed : Luminal B Her 2- 63/131(48%), LB Her 2+ 24/131(18%), Her 2 positive 17/131(12.9%) and triple negative 27/131(20.6%)(figure 1). Mean radiological tumor size was 32.5mm(25 to 70mm). Within the 71 patients operated, we observed 15 pathologic complete responses(22%) in 10 cases of luminal B subtype(6 of them her 2+), 3 her 2 positive subtype and 2 triple negative cases(figure 3). We observed 22 relapses with a mean delay of 24 months, metastatic in 95% of cases. 5 year-overall survival was Median survival was 4248/122 34.8 months, Overall survival was 32% and median survival at 44 months(6 to 216 months), better for hormone receptor positive cases (38%) and patients reaching pCR at 50% significantly better(figures 4 and 5)

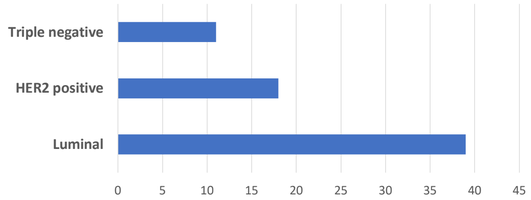


Figure 1. Molecular subtype distribution .

Table 1. Clinical presentation parameters.

	Min	Max	Mean
Symptom-Diagnosis Interval (month)	3	6	5.8
Age (year)	27	67	42.2
Radiologic Tumor Size (mm)	228	134	238

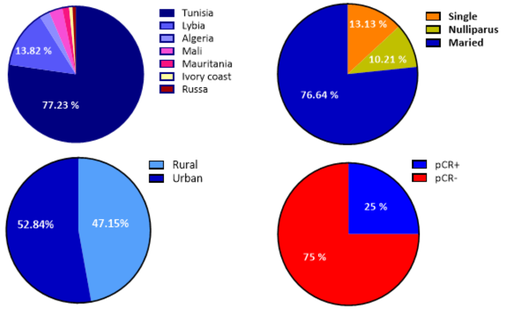


Figure 2. Epidemiological and clinical features of IBC patients.

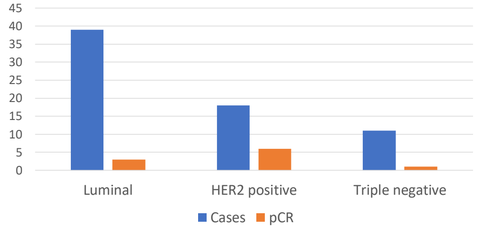


Figure 3. Pathologic complete response according to breast cancer subtype

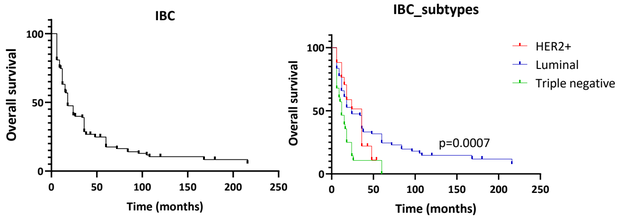


Figure 4. Overall survival in IBC patient in terms of subtypes. Kaplan-Meier OS curves in IBC patients according to the molecular subtypes. ; Red: patients with HER2+ subtype; blue: luminal subtypes; and green: triple negative subtype.

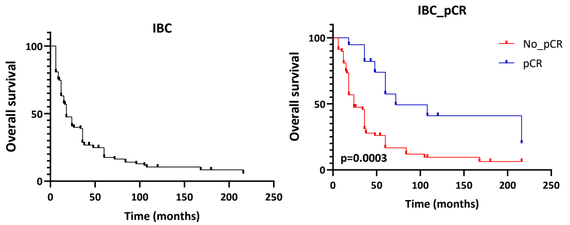


Figure 5. Overall survival in IBC patient in terms of pCR. Blue: patients with pathological complete response; Red: patients with abscence of pCR. Kaplan-Meier OS curves in IBC patients according to pCR response.

Results

Patients were notably younger (median age 42 years), consistent with previous North African reports.
Relapse occurred in one-third of patients, mostly metastatic. Survival outcomes varied substantially by subtype: Luminal B and HER2-positive patients achieved markedly longer survival, whereas triple-negative IBC displayed a poor prognosis.

Overall survival was at 87.14 months, 108 for luminal B subtype, 96.4 for her 2 positive cases and 15.1 months for triple negative cases. These findings highlight the persistent therapeutic challenge of IBC and reinforce the need for early diagnosis, optimized multidisciplinary management, and greater access to targeted strategies, especially for HER2-positive and triple-negative disease.

Discussion

Patients remain younger than those reported in western countries. We observed a positive trend in terms of survival between patients treated before and after 2010, probably due to the multidisciplinary management and the impact of targeted therapies in her 2 positive cases.

Conclusions

Our monocentric series from Tunisia, reflects the epidemiologic and anatomo-clinical features of IBC in our country. Our Tunisian monocentric study confirmed the higher regional incidence of IBC compared with Western countries. Poorer OS in negative pCR and in aggressive molecular subtypes (HER2+/TN). Younger patients.

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