RETROSPECTIVE REGISTRY STUDY OF NODE-POSITIVE BREAST CANCER CASES: SINGLE-CENTER EXPERIENCE OVER THE PAST FOUR YEARS.

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ABSTRACT

Node-positive breast cancer, characterized by the spread of cancer cells to regional lymph nodes, represents 30–40% of new breast cancer diagnoses and is a significant prognostic factor. This study aimed to establish a clinical registry of node-positive breast cancer patients treated over four years at the German Oncology Center in Limassol, Cyprus. Data from 141 female patients were analyzed, with 61% aged between 50–70 years. Most cases (83%) were classified as N1, with ductal carcinoma being the predominant histology (74%). Hormone receptor positivity was common (85% ER+, 71% PR+), while 13% were HER2+ and 3.1% were triple-negative. Treatment strategies included chemotherapy (81%), targeted therapy for all HER2+ cases, aromatase inhibitors (73.6%), and CDK4/6 inhibitors (23.4%). Genetic mutations were identified in a minority of patients. The recurrence rate was 14.2%, with a median disease-free survival of 31.38 months and overall survival of 39 months. These findings underscore the importance of personalized treatment and comprehensive data collection in optimizing outcomes and guiding prevention strategies in node-positive breast cancer.

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INTRODUCTION

Node-positive breast cancer, where cancer cells spread to regional lymph nodes, accounts for approximately 30–40% of newly diagnosed breast cancer cases. It serves as a key prognostic factor, indicating an elevated risk of recurrence and systemic spread. The number of affected nodes significantly impacts staging and treatment decisions, with survival outcomes declining as nodal burden increases.

With modern treatment strategies, the 5-year overall survival rate for node-positive breast cancer ranges from around 85% for patients with 1–3 positive nodes to approximately 60% for those with extensive nodal involvement. Standard management includes surgery, systemic therapy (chemotherapy, endocrine therapy, targeted therapy, immunotherapy), and often radiation, with treatment tailored based on tumor biology (ER/PR/HER2 status) and patient-specific factors. Advances in personalized medicine continue to refine therapeutic approaches, improving survival while reducing toxicity.

Receiving a complete medical and personal history, including risk factors of breast cancer, play a crucial role. It can guide the treatment decision and can give real world data about the connection of different factors with breast cancer incidence and mortality.

MATERIALS AND METHODS

Eligibility criteria:
•Patients with breast cancer and node positive disease
• Patients receiving systemic/hormone treatment at GMI the last 4 years

Exclusion criteria:
• De novo metastatic patients
• Patients with second malignancy

Data regarding: histology type, hormone receptor status and Her2 status, Ki index, age, different risk factors, type of neoadjuvant or adjuvant treatment, genetic testing, PFS and OS were collected from medical records at the German Oncology Center- GMI in Limassol, Cyprus, creating a registry of node-positive breast cancer cases. Statistical analysis was conducted using SPSS.

AIM

• Real world data of incidence, characteristics, treatment options and prognosis of node positive breast cancer.
• Recording medical and epidemiological data and correlate them with breast cancer incidence and prognosis.
• recording the way of taking medical and personal history in comparison with potential risk factors for breast cancer

RESULTS

N(=141)	%
Gender	
Female	99.3
Male	0.7
Age (y.o)	
<40	9.9
40-50	20.6
50-70	61
>70	26.2
Smoking	
Currently	4.3
No smoker	25.5
Past smoker	2.8
Missing Data	67.4
BMI	
Normal	29.8
Overweight	11.3
Underweight	0.3
Missing data	58.2
Births	
Given	25.5
No	0.7
Missing data	73.8
Diagnosis	
Screening	7.1
Symptomatic	14.2
Missing data	78.7
Histology	
Ductal	74.5
Lobular	19.9
Other	1.4
T stage	
T1ab	2.1
T1c	28.5
T2	54.5
T3	6.4
T4	8.5
N stage	
N1	61.2
N2	29.7
N3	9.2
Ki index	
<10%	21.6
11-20%	28.4
21-40%	33.6
>40%	16.4
ER Receptor	
Positive	86.2
Negative	13.8
PR Receptor	
Positive	71.9
Negative	28.1
HER2 Receptor	
Positive	12.9
Negative	87.1
Adjuvant Radiotherapy	90.8
Chemotherapy	83.2
Adjuvant Tamoxifen	26.4
Adjuvant Aromatase Inhibitor	73.6
Switch of anti-hormonal treatment	7.2%
Anti-hormonal treatment related Adverse Reactions	23.6%
Adjuvant CDK4/6 inhibitor	23.4
Adjuvant Olaparib	None
Pembrolizumab	2.8
Genetic testing	26
Recurrence/Metastasis	15.2

DISCUSSION

In our study of 141 female patients with lymph node-positive, non-metastatic breast cancer, the majority (61%) were between 50–70 years old, reflecting established demographic trends. Most tumors were ER-positive (85%) and PR-positive (71%), consistent with a predominantly hormone receptor-positive profile typically seen in early-stage disease. Ductal carcinoma was the most common histologic subtype (74%), in line with broader epidemiological data.

Treatment patterns mirrored current standards: 81% received chemotherapy, all HER2-positive patients were treated with targeted therapies, and aromatase inhibitors were prescribed for all hormone receptor-positive cases. However, CDK4/6 inhibitors were used in only 23.4%, and no patient received PARP inhibitors, despite a 2.8% rate of BRCA1 mutation positivity. These findings highlight ongoing gaps in the adoption of molecularly guided therapies, even in modern practice.

Clinical outcomes were favorable: recurrence occurred in 14.2% of patients, and median disease-free survival (DFS) and overall survival (OS) were 31.38 and 39 months, respectively. These results are slightly superior to recurrence rates reported in older cohorts, potentially reflecting improvements in systemic therapy.

Genetic testing uptake was modest (26%), identifying actionable mutations such as BRCA1, BRCA2, PALB2, and PIK3CA, but suggesting that broader genomic profiling could further refine treatment strategies. The use of immunotherapy (2.8% received pembrolizumab) remains limited outside of clinical trials.

Overall, our results align with existing literature, reinforcing the critical role of targeted systemic therapies and the need for continued integration of molecular diagnostics to optimize patient outcomes in lymph node-positive, non-metastatic breast cancer.

CONCLUSIONS

This real-world analysis of node-positive, non-metastatic breast cancer patients demonstrates strong adherence to established therapeutic standards, particularly in systemic treatment selection. However, gaps remain in genetic testing uptake and the use of emerging therapies such as olaparib. The cohort's lower-than-expected triple-negative breast cancer rate and limited pembrolizumab use reflect real-world patient selection and evolving practice patterns.

Enhanced data collection on lifestyle factors and broader application of genetic testing could optimize risk stratification and therapeutic personalization, ultimately improving outcomes for this high-risk population. Ongoing incorporation of precision oncology approaches, including novel targeted therapies and immunotherapies, is expected to further improve survival in future cohorts.

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