Treatment outcomes in early breast cancer patients undergoing neoadjuvant chemotherapy in a multidisciplinary setting. An analysis of 273 patients.

BL. Rapoport [1,4] , T. Smit [1], L. Heyman [1], C.A. Benn [2,5,7], S. Nayler [3,6], R. Anderson [4]

[1] The Medical Oncology Centre of Rosebank, Johannesburg, South Africa; [2] Head of Netcare Breast Care Centre, Johannesburg, South Africa; [3] Gritzman and Thatcher Inc. Laboratories, Johannesburg, South Africa; [4] Department of Immunology, Faculty of Health Sciences, University of Pretoria, South Africa; [5] Head of Helen Joseph Hospital Breast Centre; [6] Wits Donald Gordon Medical Centre, Johannesburg, South Africa; [7] Department of Surgery, University of Witwatersrand

Background

- Pathologic complete response (pCR) following neoadjuvant chemotherapy (NAC) has been proposed as a surrogate endpoint for of long-term clinical benefit, in early breast cancer (BC).
- A pCR is dependent on clinical-pathological characteristics and molecular subtypes.

Methods

- The aim of the study was to evaluate real-world treatment outcomes managing early breast cancer patients.
- We retrospectively analyzed data of 273 patients undergoing taxane and/or anthracycline, +/- trastuzumab based NAC.
- Pathological complete response was defined as the complete disappearance of the invasive cancer in the breast and absence of tumor in the axillary lymph nodes.

Study Population

- We analyzed retrospectively data on 273 patients undergoing taxane and/or anthracycline, transtuzumab based NAC.
- Patients received neo-adjuvant therapy including TAC, AC & Taxane, Taxane, TC, AC, Taxane & Adriamicin, AC & Taxane & Herceptin, or Taxane & Herceptin.

Ethics approval

- Ethics approval was obtained from Pharma-Ethics, Pretoria, South Africa (ethics committee working according to the South African Ethics regulations).

Clinical and pathological assessment

- Clinical assessment of the primary tumor and lymph nodes was made using bi-dimensional caliper measurements of the primary tumor and axillary nodes.
- Sonographical assessments of the primary tumor and lymph nodes were performed regularly.
- Immunohistochemical staining was performed for ER, PR, Her-2 and Ki-67.
- Fluoresce in situ hybridization (FISH) was used to confirm Her-2 positivity.
- Pathological complete response (pCR) was defined as the complete disappearance of the invasive cancer in the breast and absence of tumor in the axillary lymph nodes examined by axillary clearance.

Statistical Methods

- The Mann Whitney U-test was used to compare the cell density between TNBC and Non-TNBC patients.
- Fisher's exact or Chi-squared tests were used for the analysis of categorical variables.
- Logistic regression multivariate models included only variables that exhibited a univariate association with the dependent variable, pCR ($p < 0.1$).
- NCSS software version 11 for Windows (USA) was used for statistical analyses.

Results

Table 1. Progression Free Survival by PCR.

Age	
Median	52
Range	26-89
Biological Type	
HER2 Positive	44 (16.12%)
Luminal A	12 (4.4%)
Luminal B	55 (20.15%)
TNBC	162 (59.34%)
Tumor Size	
1	61 (22,51%)
2	168 (61,99%)
3	27 (9,96%)
4	15 (5,54%)
Nodal Disease	
Yes	124 (46,62%)
No	142 (53,38%)
Stage	
1	31 (11,52%)
2A	541 (15,24%)
2B	110 (40,89%)
3	87 (32,34%)
Ki-67	
14-39%	98 (37,26%)
>40%	2 (0,76%)
≤14%	20 (7,6%)
≥40%	143 (54,37%)

- The pCR rate of the entire cohort was 48%. At 4 years 96% of patients who attained a pCR were disease free compared to 74% of patients who did not attain a pCR.

Figure 1. Progression Free Survival by PCR.

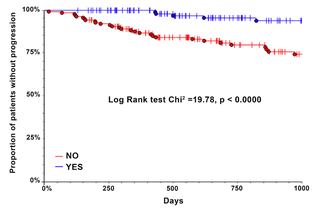


Figure 2. Response by biological type.

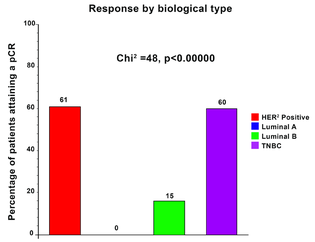


Figure 3. Response by primary tumor size.

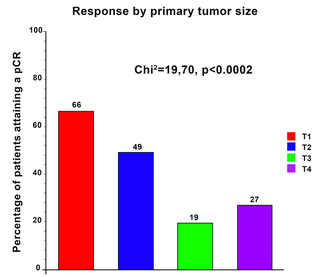


Figure 4. Response by nodal disease.

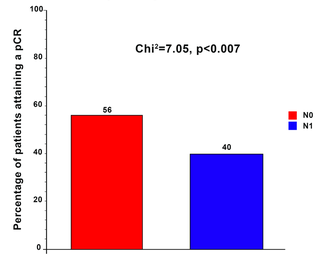


Figure 5. Response by age.

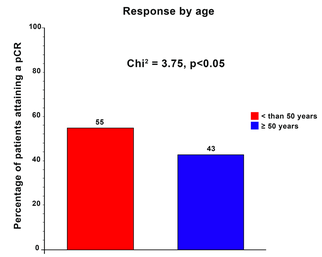


Figure 6. Response by estrogen receptor status.

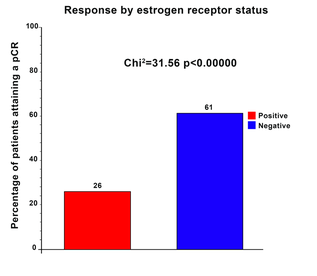


Figure 7. Response by progesterone receptor status.

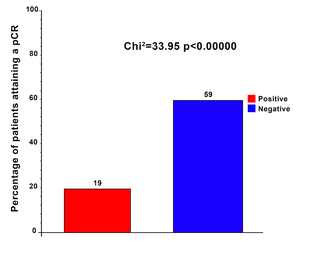


Figure 8. Response by Ki67.

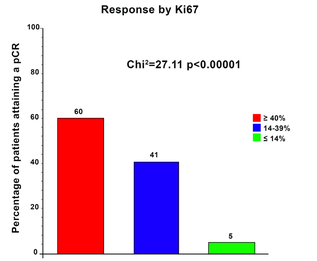
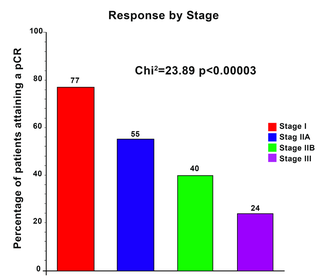


Figure 9. Response by stage.



- Menopausal status, ethnicity, extra-nodal spread and lympho-vascular invasion were not associated with a higher pCR rate.

Table 2. Logistic Regression Analysis.

Logistic Regression Analysis		
Variable	**Chi square**	**P-Value**
Biological Type	18,84947	0,0003
Ki67	7,19371	0,0073
Progesterone Receptor Status	2,80959	0,0937
Age	1,10388	0,2934
Tumor Size	3,44133	0,3285
Stage	2,58006	0,461
Oestrogen Receptor Status	0,05496	0,8147
Nodal Disease	0,00431	0,9476

Conclusions

- This data highlights the importance of breast care multidisciplinary management in early disease.
- TNBC and HER-2+ subsets were associated with a higher pCR rate. Our results are similar to those reported in a clinical trial setting.

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Corresponding author: bernardo.rapoport@up.ac.za