# Neoadjuvant chemotherapy in women with breast cancer: surgical treatment, lymph node metastasis and pathologic response

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## OBJECTIVES

Evaluate the pathologic response of neoadjuvant chemotherapy according to the molecular subtype;

Evaluate the incidence and associated factors with conservative surgery after neoadjuvant chemotherapy;

Identify the alteration of axillary status before and after neoadjuvant chemotherapy;

Analyze the number of sentinel lymph nodes obtained by double labeling, by molecular subtype;

Assess the concordance between intraoperative *frozen* section and hematoxylin-eosin (HE) on the axillary status lymph node biopsy.

## METHODS

Cohort study in women with breast cancer submitted to neoadjuvant chemotherapy at Hospital do Cancer III (HCIII) / Instituto Nacional de Câncer José de Alencar Gomes da Silva (INCA) between January 2010 and December 2014.

The patients were identified using the electronic systems of the hospital unit.

The following variables will be studied: Sociodemographic (age, marital status, educational level, occupation, skin color); Risk behaviors (smoking, alcoholism); Comorbidities (Charlson Index); Neo-adjuvant treatments (drugs, start and end dates); Tumor (location, size, degree, clinical and histopathological staging, expression of hormone receptors and HER2); Lymph nodes (number of sentinel and non-sentinel lymph nodes removed and positive); Surgical and adjuvant treatments (type, dates).

A descriptive analysis will be carried out through the measures of central tendency and dispersion for the continuous variables and absolute and relative frequency for the categorical ones. To evaluate the factors associated with conservative surgery, univariate and multiple logistic regression analysis will be performed using the odds ratio. To assess the concordance between intraoperative *frozen* section and HE on the axillary status, simple and random agreement will be performed (Kappa statistic). To analyze the data will be used the program SPSS version 23.0.

## PRELIMINARY RESULTS

In the study period, 1661 women underwent neoadjuvant chemotherapy.

At breast cancer diagnosis, they had a median age of 51 years (16 to 84). The majority of them are white (47.4%), married (61.5%) and resident in the city of Rio de Janeiro (60.9%). In 86.4%, the diagnosis was made before regostration in the hospital (HCIII) (Table 1).

The invasive ductal carcinoma was the most incident (85.9%). At diagnosis, the tumor was classified as T1 (1.9%), T2 (22.9%), T3 (34.1%) and T4 (41.2%) and in 71.9% of cases, it was presented axillary lymph node involvement.

The median time between diagnosis and neoadjuvant chemotherapy was 96 days (2 - 675). In 20.8%, adjuvant chemotherapy was also performed. Radiotherapy was performed in before surgery in 3.2% and after in 78.1%, and hormone therapy in 67.0% of the women. At the end of the first treatment, complete pathological response was observed in 94.9%.

To date, the median follow-up after diagnosis of cancer was 14 months (0 to 80), with 276 deaths (16.6%) being observed.

**Table 1 - Sociodemographic characteristics of women submitted to neoadjuvant chemotherapy at Hospital do Cancer III (HCIII)**

| Variables | N (%) |
|---|---|
| **Skin colour** | |
| White | 788 (47,4%) |
| No white | 873 (52,6%) |
| **Marital status** | |
| Single | 407 (24,5%) |
| Married | 795 (61,5%) |
| Widow | 181 (10,9%) |
| Missing | 51 (3,1%) |
| **Consumption of alcoholic beverages** | |
| Never | 1106 (66,6%) |
| Ex consumer | 37 (2,2%) |
| Yes | 406 (24,4%) |
| Missing | 112 (6,7%) |
| **Tobacco consumption** | |
| Never | 1019 (61,3%) |
| Ex consumer | 241 (14,5%) |
| Yes | 316 (19,0%) |
| Missing | 85 (5,2%) |
| **Place of residence** | |
| City of Rio de Janeiro | 1012 (60,9%) |
| Others | 649 (39,1%) |
| **Registration in the hospital unit** | |
| No diagnosis and without treatment | 219 (13,2%) |
| With diagnosis and without treatment | 1435 (86,4%) |
| Without diagnosis and without treatment | 07 (0,4%) |

**Table 2 - Clinical characteristics of women submitted to neoadjuvant chemotherapy at Hospital do Cancer III (HCIII)**

| Variables | N (%) |
|---|---|
| **Year of breast cancer diagnosis** | |
| 2010 | 325 (19,6%) |
| 2011 | 276 (16,6%) |
| 2012 | 354 (21,3%) |
| 2013 | 315 (19,0%) |
| 2014 | 391 (23,5%) |
| **Clinical stage (T)** | |
| T1 | 29 (1,7%) |
| T2 | 355 (21,4%) |
| T3 | 528 (31,8%) |
| T4 | 638 (38,4%) |
| Missing | 111 (6,7%) |
| **Clinical stage (N)** | |
| N0 | 450 (27,1%) |
| N1 | 825 (49,7) |
| N2 | 260 (15,7) |
| N3 | 15 (0,9%) |
| **Chemotherapy** | |
| Neoadjuvant | 1316 (79,2%) |
| Neoadjuvant and adjuvant | 345 (20,8%) |
| **Radiotherapy** | |
| No | 308 (18,5%) |
| Neoadjuvant | 56 (3,4%) |
| Adjuvant | 1297 (78,1%) |
| **Hormonetherapy** | |
| No | 553 (33,3%) |
| Neoadjuvant | 30 (1,8%) |
| Adjuvant | 1065 (64,1%) |
| Neoadjuvant and adjuvant | 13 (0,8%) |
| **State of the disease at the end of the first treatment** | |
| Complete response | 1576 (94,9%) |
| Partial remission or stable disease | 08 (0,5%) |
| Disease progression | 73 (4,4%) |
| Death | 04 (0,2%) |

## PERSPECTIVES

The clinical and pathological data of the 1661 women eligible are being collected through an active search of medical records (physical and electronic).

It is estimated that data collection and input of data will be completed by December 2017, with the end of the study expected in August 2018.

Projeto Gráfico: Setor de Edição e Informação Técnico-Científica / INCA