Group 1: Ki-67 ≤10%

Group 2: Ki-67 >10%

4- Ki-67 >20% Classification

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Statistical analysis

Initially, a descriptive analysis was performed with the calculation of mean and standard deviation for continuous variables and frequencies and percentages for categorized variables. The primary outcome was overall survival (OS) and the secondary outcome was cancer-specific survival (CSS). OS was defined as the time interval between the date of diagnosis and the date of death (related to breast cancer or death from any cause). CSS was defined as the time interval between the date of diagnosis and the date of death related to breast cancer. Follow-up data were collected between October 2020 and May 2021. To calculate survival outcomes, the Kaplan-Meier estimator was used, followed by the log-rank test and the Sidak test for comparison between groups. A Cox proportional hazard model was used to analyze the association between different subgroups and survival. The chi-square test was used to study the association of variables and to compare proportions. A level of significance of 5% or the corresponding p-value was adopted in all tests. The analyses were performed using the Statistical Analysis System 9.4 program. **Results:** A total of 842 patients with breast cancer were included in the study. Clinical features are shown in Table 1. The mean age was 56.4 years, 35.9% of patients were 50 years or younger, and 64.3% were postmenopausal. Most patients (60.9%) had only elementary education and 14.3% had a higher education level. Nulliparous women accounted for 9.5% of cases and 26.1% of patients had a first- or second-degree family history of breast or ovarian cancer.

Considering the anatomical staging, most cases (63%) were in stage I or II and 6.9% in stage IV. Histological grade 3 was observed in 39.4% of the cancers and 73.4% of the patients had ER positive tumors, 62.4% PR-positive tumors, and 21.2% HER2-positive tumors. Luminal (HER2-negative) subtypes accounted for 47.2% of cases, followed by TN (15.2%), Luminal B-HER2 positive (14.1%), and HER2-enriched (7.3%). As for the Ki-67 proliferation index, in 24.5% of cases it was ≤10%, and in 42.8% of cases it was >20%. Conservative surgical treatment was performed in 47% of cases and mastectomy with immediate reconstruction in 13.4% of patients. Most patients underwent systemic chemotherapy (76.9%) and radiation therapy (82.7%). It was observed that, regardless of the subgroup, most patients were in stage II. With regard to Ki-67 index, 84.9% of patients with Ki-67 ≤10% were in stages I and II and 38.1% of patients with Ki-67 >20% were in stages III and IV. TN tumors accounted for 47.7% of cases in patients younger than 40 years, 23.4% of tumors between 40 and 50 years, and 15.2% of tumors in patients older than 50 years of age. Luminal subtypes accounted for 30.1% of tumors in patients younger than 40 years, 45.6% of tumors between 40 and 50 years, and 59.7% of tumors in patient older than 50 years of age. Considering Ki-67, 75.8% of patients younger than 40 years had the index greater than 20% and only 13.4% had a Ki-67 ≤10%. Between 40 and 50 years, 62.6% of patients had a Ki-67 >20% and 23.1% had a level ≤10%. In patients older than 50 years, Ki-67 was higher than 20% in 46.4% and ≤10% in 37.8% of cases. Luminal A tumors (regardless of the Ki-67 cutoff value) had the lowest rates of chemotherapy, in which one-third of patients with this subtype did not undergo chemotherapy. Patients with triple-negative and luminal B (Ki-67 >20%) tumors were the groups that mostly underwent systemic cytotoxic treatment (89% of the patients). Patients with a Ki-67 ≤10% did not undergo chemotherapy in one--third of cases, whereas 91.8% of patients with Ki-67 >20% underwent systemic treatment. When assessing the type of surgery according to tumor subtype, mastectomy was more performed in the HER2-enriched group, corresponding to 41.9% of the surgeries performed in this tumor subtype. As for conservative surgery, it was more frequently performed in the Luminal A (Ki-67 ≤20%) group, corresponding to 58.2% of the cases of surgery in this subtype. The group with the highest percentage of reconstruction was the Luminal B-HER2 positive, in which the mastectomy followed by reconstruction corresponded to 20.3% of cases. The survival rate was 94.4% in stage I, 85.2% in stage II, 64.7% in stage III, and 19.6% in stage IV. OS was 78.2%. A better survival was observed in the Luminal A subgroup (88.9%), regardless of the Ki-67