Impact of time to surgery after neoadjuvant chemotherapy in patients with operable breast cancer

**Background:** Some studies of adjuvant chemotherapy (CT) suggested that a shorter interval before the start of therapies may improve survival outcomes in many groups of patients. Time to surgery (TTS) after neoadjuvant CT and survival outcomes have not been established yet. The aim of this study is to evaluate the impact of TTS after neoadjuvant CT in terms of Overall Survival (OS) and Disease Free Survival (DFS).

**Patients and Methods:** A retrospective analysis was conducted in 295 patients receiving neoadjuvant CT for stage I-IIIc breast cancer between 1991 and 2013. 56 pts underwent surgery within 21 days (group A) from last CT cycle, 148 pts within 22-35 days (group B) and 91 pts after 36 days (group C). The majority were infiltrating ductal carcinoma, stage IIA (37.6%) and IIB (33.9%), with nodal involvement in 51.6% of the cases. LumA 18.3%, LumB/HER2- 28.2%, LumB/Her2+ 20.7%, HER2+ 9.8%, TNBC 21%. All patients were treated with neoadjuvant CT: 70.5% with anthra-taxanes based regimen, 18% with anthra-alone, 10.9% with taxanes alone, 0.3% with CMF; plus Trastuzumab in 70% of HER2+ diseases.

**Results:** After a median follow up of 4.6 years, it was observed that patients in group A showed a significant better OS than group B (HR 4.22; 95% CI, 1.27 – 14.00, p=0.018) and group C (HR 3.61; 95% CI, 1.01 – 12.86, p=0.048). Moreover group A showed a significant better DFS than group B (HR 3.41; 95% CI 1.34 to 8.65, p=0.010) and group C (HR 3.77; 95% CI 1.42 to 9.95, p=0.007).

No correlations with OS were found in pts who achieved pCR (20.7%); pCR was predictive of better 5- and 10-years DFS independently from TTS (95.4% in the pCR-group vs 75.4% of non-pCR group, HR 0.16; 95% CI 0.04 to 0.66, p=0.011). TTS may influence DFS in non-pCR group: indeed 5-years DFS is 97.3% in group A, 72.7% in group B (HR 2.89; 95% CI 1.14 to 7.36, p=0.026), and 68.5% in group C (HR 3.44; 95% CI 1.3 to 9.1, p=0.013). No significant correlations with regard of stage at diagnosis or molecular subtypes were found.

**Conclusions:** These results suggest that TTS after primary CT may influence patients' survival, regardless of stage at diagnosis and tumor subtype, so that a shorter interval between that last cycle of neoadjuvant chemotherapy and breast surgery should be addressed whenever possible.
1. time to surgery
2. neoadjuvant chemotherapy
3. operable breast cancer

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