The impact of inter-cycle treatment delays on progression-free survival in early-stage breast cancer

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- Inter-cycle delays to chemotherapy are often required due to drug toxicity.
- The impact of these delays on progression-free survival (PFS) is poorly understood.
- This large retrospective cohort study compared PFS between stage 2 and 3 breast cancer patients in England who were delayed and those who were treated to schedule.

**Background**

- 25 – 33% of chemotherapy treatments are delayed within cycle in breast cancer patients\(^4\).
- The impact on PFS is poorly understood, however some studies suggest delays impair treatment efficacy by reducing relative dose intensity\(^3\).
- Using population-based data from a large cohort of breast cancer patients in England, the frequency of inter-cycle delays was calculated.

**Methods**

- PFS was compared between patients who had treatment delays and those treated to schedule.
- Delayed treatments were defined as >7 days later than scheduled.
- PFS was calculated as time from initiation of chemotherapy to disease progression; defined as commencing another line of treatment or death, whichever came first.
- Cox regression was used to investigate the association of treatment delay and other covariates with PFS.
- Relative dose intensity was calculated as dose received compared to standard dose and compared between groups.

**Results**

8,680 stage 2 and 3 breast cancer patients in England treated with first-line chemotherapy in the adjuvant or neoadjuvant setting were included:

- 25.5% of patients experienced at least one inter-cycle delay.
- Delays >7 days were significantly associated with reduced PFS (HR 1.41, 95% CI 1.36-1.47).
- Triple negative breast cancer (HR 3.26, 95% CI 3.07-3.47) and BMI >40 (HR 1.22, 95% CI 1.09 – 1.37) were also associated with lower PFS.
- Median relative dose intensity was significantly reduced in delayed patients (83.1%) vs treated-to-schedule (94.4%).

**Conclusions**

- Our study is the largest of its kind demonstrating a significant association between treatment delays and PFS outcomes in early-stage breast cancer patients.
- Hospitals should aim to minimise avoidable treatment delays to achieve the best outcomes for these patients.

**References**