

INTISARI

Latar Belakang: Kanker payudara adalah salah satu penyebab utama kematian yang diakibatkan oleh kanker pada perempuan usia reproduktif. Salah satu tatalaksana utama pengobatan kanker payudara adalah dengan kemoterapi. Kemoterapi berpotensi menyebabkan kerusakan pada sel yang aktif membelah, seperti folikel primordial, sehingga menyebabkan gangguan fungsi ovarium dan menurunnya cadangan ovarium. Cyclophosphamide adalah kemoterapi berbasis agen alkilasi yang memiliki gonadotoksitas tinggi. *Gonadotropin-Releasing Hormone* (GnRH) agonis *co-treatment* adalah sebuah upaya preservasi ovarium. Fungsi ovarium diukur menggunakan pola menstruasi (frekuensi, regularitas, durasi, volume, dan gejala dismenore), sedangkan cadangan ovarium diukur menggunakan kadar *Anti-Mullerian Hormone* (AMH) serum perifer.

Tujuan: Penelitian ini bertujuan untuk mengkaji dampak pemberian kemoterapi, korelasi dosis kumulatif cyclophosphamide, dan dampak GnRH agonis *co-treatment* terhadap fungsi dan cadangan ovarium pada perempuan dengan kanker payudara usia reproduktif dewasa di Indonesia.

Metode: Penelitian ini menggunakan jenis penelitian kohort prospektif. Subjek penelitian adalah 10 pasien perempuan usia reproduktif dewasa yang direkrut menggunakan teknik *consecutive sampling* di Instalasi Kanker Terpadu TULIP RSUP Dr. Sardjito, Yogyakarta. Pengukuran kadar AMH serum perifer dan pola menstruasi dilakukan sesaat sebelum siklus pertama kemoterapi dimulai dan diulangi lagi satu minggu setelah siklus kemoterapi terakhir diadministrasikan. Analisis data menggunakan uji Wilcoxon dan korelasi Spearman dengan signifikansi $p < 0,05$.

Hasil: Kemoterapi menyebabkan *chemotherapy-related hypogonadotropic hypogonadism* yang digambarkan dengan perubahan frekuensi ($p = 0,020$) dan gangguan regularitas menstruasi ($p = 0,014$), serta terdapat penurunan kadar AMH serum perifer ($p = 0,001$). Dosis kumulatif cyclophosphamide berkorelasi dengan gejala dismenore. Pemberian GnRH agonis *co-treatment* tidak berdampak terhadap pola menstruasi dan kadar AMH serum perifer.

Kesimpulan: Kemoterapi menyebabkan gangguan fungsi dan penipisan cadangan ovarium. Dosis kumulatif cyclophosphamide berkorelasi dengan gangguan fungsi ovarium.

Kata Kunci: Kanker payudara; Kemoterapi; Fungsi ovarium; Cadangan ovarium; Pola menstruasi; *Anti-Mullerian hormone*; GnRH agonis, *Cyclophosphamide*

ABSTRACT

Background: Breast cancer is one of the leading causes of cancer-related deaths in women of reproductive age. One of the main treatments for breast cancer is chemotherapy. Chemotherapy has the potential to cause damage to actively dividing cells, such as primordial follicles, resulting in impaired ovarian function and decreased ovarian reserve. Cyclophosphamide is an alkylating agent-based chemotherapy that has high gonadotoxicity. Gonadotropin-Releasing Hormone (GnRH) agonist co-treatment is an effort to preserve the ovaries. Ovarian function is measured using menstrual patterns (frequency, regularity, duration, volume, and symptoms of dysmenorrhea), while ovarian function is measured using peripheral serum Anti-Mullerian Hormone (AMH) levels.

Objective: This study aims to examine the impact of chemotherapy administration, the correlation of cumulative dose of cyclophosphamide, and the impact of GnRH agonist co-treatment on ovarian function and reserve in women with breast cancer of adult reproductive age in Indonesia.

Method: This study used a prospective cohort study type. The subjects were 10 adult female patients of reproductive age recruited using consecutive sampling technique at the Integrated Cancer Installation TULIP RSUP Dr. Sardjito, Yogyakarta. Peripheral serum AMH levels and menstrual patterns were measured shortly before the first cycle of chemotherapy began and repeated one week after the last chemotherapy cycle was administered. Data analysis used the Wilcoxon test and Spearman correlation with a significance of $p < 0.05$.

Results: Chemotherapy causes chemotherapy-related hypogonadotropic hypogonadism, which is described by changes in frequency ($p=0.020$) and menstrual irregularity ($p=0.014$). Peripheral serum AMH levels decrease ($p=0.001$). Cumulative doses of cyclophosphamide correlate with symptoms of dysmenorrhea. Gonadotropin-Releasing Hormone agonist co-treatment does not affect menstrual patterns or peripheral serum AMH levels.

Conclusion: Chemotherapy causes ovarian dysfunction and depletion of ovarian reserve. Cumulative doses of cyclophosphamide correlate with ovarian dysfunction.

Keywords: Breast cancer; Chemotherapy; Ovarian function; Ovarian reserve; Menstrual pattern; Anti-mullerian hormone; GnRH agonist; Cyclophosphamide