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**Hubungan Antara Panjang Telomer Leukosit dan Kadar Telomeric Repeat Binding Factor 2 Plasma Dengan
Recurrence Free Survival, Metastasis Free Survival, Overall Survival Pada Penderita Kanker Payudara Operable**

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Universitas Gadjah Mada, 2025 | Diunduh dari <http://etd.repository.ugm.ac.id/>

Hubungan Antara Panjang Telomer Leukosit dan Kadar Telomeric Repeat Binding Factor 2 Plasma dengan **Recurrence Free Survival, Metastasis Free Survival, Overall Survival** pada Penderita Kanker Payudara *Operable*

ABSTRAK

Latar belakang : Prognosis kanker payudara dipengaruhi berbagai faktor. Panjang telomer pada DNA dan kadar *telomere repeat binding factor 2* (TRF 2) pada plasma berperan sebagai marker prognostik tambahan pada kanker payudara.

Tujuan : Mengetahui hubungan panjang telomer dan kadar TRF 2 dengan *recurrence free survival, metastasis free survival, overall survival* pada penderita kanker payudara *operable*.

Metode penelitian : Jenis Penelitian ini merupakan *analytic* dengan rancangan *cohort retrospective* menggunakan DNA darah tepi dan plasma perempuan yang terdiagnosis kanker payudara dan belum menjalani terapi. Pemeriksaan panjang telomer diukur dengan metode kuantitatif *Chawthon's singleplex qPCR real time* serta kadar TRF 2 dengan *Human TRF 2 (Telomeric Repeat Binding Factor 2) ELISA Kit*. Sampel penelitian di-*follow up* berdasarkan data rekam medis dengan terapi primer (pembedahan, kemoterapi, radiasi atau hormonal) kemudian dievaluasi *recurrence, metastasis atau overall survival*. Analisa data dengan *Kaplan-Meier* dan *regresi logistic*.

Hasil : Peningkatan kadar TRF 2 (HR 10,69; 95%CI 1,25 – 91,06; $p=0,03$) dan usia ($p=0,04$) memiliki hubungan dengan *recurrence free survival* kasus kanker payudara. Peningkatan kadar TRF 2 (HR 3,01; 95%CI 1,35 – 6,71; $p=0,03$), panjang telomer (HR 3,01; 95%CI 1,35 – 6,71; $p=0,01$), *human epidermal growth factor receptor 2* (HER 2) ($p=0,03$) memiliki hubungan dengan *metastasis free survival*. Peningkatan kadar TRF 2 (HR 4,73; 95%CI 2,16 – 10,36; $p=0,01$), HER 2 ($p=0,03$) dan radioterapi ($p=0,03$) memiliki hubungan dengan *overall survival*.

Kesimpulan : Peningkatan kadar TRF 2 plasma memiliki hubungan dengan *recurrence free survival, metastasis free survival* dan *overall survival* kasus kanker payudara. Panjang telomer leukosit memiliki hubungan dengan *metastasis free survival* namun tidak memiliki hubungan dengan *recurrence free survival, dan overall survival* kasus kanker payudara.

Kata kunci : *telomere length, telomere repeat binding factor, recurrence free survival, metastasis free survival, overall survival, breast cancer*



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Relationship Between Leukocyte Telomere Length and Telomeric Repeat Binding

Factor 2 Levels in Plasma with Recurrence-Free Survival, Metastasis-Free Survival,
and Overall Survival
in Operable Breast Cancer Patients

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ABSTRACT

Background : Breast cancer prognosis is influenced by various factors. Telomere length in DNA and telomere repeat binding factor 2 (TRF 2) levels in plasma act as additional prognostic markers in breast cancer.

Purpose : To determine the relationship between telomere length and TRF 2 levels with recurrence free survival, metastasis free survival, and overall survival in operable breast cancer patients.

Methods : This type of research is analytic with a retrospective cohort design using peripheral blood DNA and plasma from women diagnosed with breast cancer and have not undergone therapy. Telomere length examination was measured using the quantitative Chawthon's singleplex qPCR real time method and TRF 2 levels with the Human TRF 2 (Telomeric Repeat Binding Factor 2) ELISA Kit. The study samples were followed up based on medical record data with primary therapy (surgery, chemotherapy, radiation or hormonal) then evaluated for recurrence, metastasis or overall survival. Data analysis using Kaplan-Meier and logistic regression.

Results : Increased levels of TRF 2 (HR 10.69; 95%CI 1.25 – 91.06; p=0.03) and age (p=0.04) were associated with recurrence free survival in breast cancer cases. Increased levels of TRF 2 (HR 3.01; 95%CI 1.35 – 6.71; p=0.03), telomere length (HR 3.01; 95%CI 1.35 – 6.71; p=0.01), human epidermal growth factor receptor 2 (HER 2) (p=0.03) were associated with metastasis free survival. Increased levels of TRF 2 (HR 4.73; 95%CI 2.16 – 10.36; p=0.01), HER 2 (p=0.03) and radiotherapy (p=0.03) were associated with overall survival.

Conclusions : Increased plasma TRF2 levels have a relationship with recurrence-free survival, metastasis free survival of breast cancer and overall survival cases. Leukocyte telomere length have a relationship with metastasis-free survival but has no relationship with recurrence-free survival or overall survival of breast cancer cases.

Keywords : *telomere length, telomere repeat binding factor, recurrence free survival, metastasis free survival, overall survival, breast cancer*