HUBUNGAN EKSPRESI CDK4 DAN HER2 DENGAN PARAMETER KLINIKOPATOLOGIK PASIEN *RHABDOMYOSARCOMA* DI RS KARIADI SEMARANG

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Abstrak

Latar Belakang: *Rhabdomyosarcoma* (RMS) merupakan tumor ganas mesenkimal dengan diferensiasi otot skelet, terutama terjadi pada anak laki-laki usia 2-6 tahun. CDK4 dan HER2 diduga berperan dalam tumorigenesis.

Tujuan: Menganalisis hubungan ekspresi imunohistokimia CDK4 dan HER2 dengan parameter klinikopatologik pada pasien RMS.

Metode: Penelitian retrospektif potong lintang menggunakan 30 sampel RMS di RS Dr. Kariadi (2019-2023). Ekspresi CDK4 dan HER2 dinilai dengan imunohistokimia dan dihubungkan dengan usia, jenis kelamin, lokasi tumor, subtipe, dan *overall survival*. Analisis statistik menggunakan uji Chi-square, Fisher exact, dan Kaplan-Meier.

Hasil: Ekspresi CDK4 positif pada 73,3% sampel (22/30), sedangkan HER2 negatif pada semua kasus. Tidak ditemukan hubungan signifikan antara ekspresi CDK4 dengan usia (p=1,000), jenis kelamin (p=0,698), lokasi tumor (p=0,060), maupun subtipe (p=0,842). Analisis ketahanan hidup tidak menunjukkan perbedaan bermakna (p=1,813), meskipun terdapat tren ketahanan hidup lebih pendek pada kasus CDK4 positif.

Kesimpulan: CDK4 sering terekspresi pada RMS namun tidak berhubungan signifikan dengan parameter klinikopatologik. Ekspresi HER2 konsisten negatif, mungkin dipengaruhi faktor metodologis atau biologis. Penelitian lanjutan dengan sampel lebih besar dan teknik molekuler diperlukan untuk memvalidasi temuan ini.

Kata Kunci: *Rhabdomyosarcoma*, CDK4, HER2, imunohistokimia, parameter klinikopatologik.

Association Between CDK4 and HER2 Expression and Clinicopathological Parameters in Patients with Rhabdomyosarcoma at Kariadi Hospital Semarang

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Abstract

Background*: Rhabdomyosarcoma (RMS) is a malignant mesenchymal tumor exhibiting skeletal muscle differentiation, predominantly affecting mostly boys aged 2-6 years. Molecular classification divides RMS into fusion-positive (e.g., PAX3/7-FOXO1) and fusion-negative subtypes, with CDK4 and HER2 playing potential roles in tumor pathogenesis.*

Aim*: This study aimed to evaluate the association between immunohistochemical expression of CDK4 and HER2 with clinicopathological parameters in RMS patients.*

Methods*: We conducted a retrospective cross-sectional analysis of 30 paraffin-embedded RMS specimens from Dr. Kariadi Hospital (2019-2023). Immunohistochemical staining for CDK4 and HER2 was performed and correlated with age, sex, tumor location, histological subtype, and overall survival. Statistical analysis employed Chi-square, Fisher's exact, and Kaplan-Meier methods.*

Results*: CDK4 expression was detected in 73.3% of cases (22/30), while HER2 was uniformly negative. No statistically significant associations were observed between CDK4 expression and patient age (p=1,000), sex (p=0,698), tumor location (p=0,060), or histological subtype (p=0,842). Survival analysis revealed no significant difference in overall survival (p=1,813), though a trend toward poorer outcomes was noted in CDK4-positive cases.*

Conclusion*: While CDK4 is frequently expressed in RMS, supporting its involvement in tumor biology, its expression does not significantly correlate with standard clinicopathological parameters. The consistent absence of HER2 expression warrants further investigation into methodological and biological factors. These findings highlight the need for larger, molecularly-stratified studies to better characterize these biomarkers in RMS.*

Keywords*: Rhabdomyosarcoma, CDK4, HER2, immunohistochemistry, prognostic markers*