

Gambaran status metilasi gen promotor methylguanine deoksiribonucleic acid methyltransferase pada astrositoma dan faktor-faktor yang mempengaruhinya = Methylation status of the methylguanine deoksiribonucleic acid methyltransferase gene promoter among patients with astrocytomas

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Abstrak

[Latar belakang—Metilasi dari gen promotor O6-methylguanine-DNA methyltransferase (MGMT) adalah salah satu faktor yang berperan pada karsinogenesis dan berkembang menjadi marker dalam menilai progresivitas dan respons terapi astrositoma. Tujuan—Untuk mendapatkan gambaran frekuensi status metilasi gen promotor MGMT pada pasien astrositoma menggunakan methylation specific polymerase chain reaction (MS-PCR) dan methylation specific high resolution melting (MS-HRM). Metode—Dilakukan pengumpulan data klinis, imaging dan blok parafin jaringan astrositoma di RSCM dalam kurun waktu 2008-2012. Status metilasi gen promotor MGMT dianalisis menggunakan MS-PCR dan MS-HRM serta dihubungkan dengan berbagai faktor prognostik klinis. Penelitian ini adalah penelitian potong-lintang. Hasil— Didapatkan 13 sampel yang terdiri dari 7 astrositoma derajat rendah dan 6 astrositoma derajat tinggi. Metilasi gen promotor MGMT didapatkan pada 1/13 sampel astrositoma dengan MS-PCR dan 4/13 sampel dengan MS-HRM yang seluruhnya adalah astrositoma derajat rendah. Terdapat perbedaan yang bermakna antara status metilasi gen promotor MGMT dengan derajat keganasan astrositoma yaitu astrositoma derajat rendah 4/7 sampel, tanpa ditemukan pada astrositoma derajat tinggi ($p=0.049$) sedangkan faktor lain seperti usia, jenis kelamin, karnofsky performance scale (KPS), lokasi astrositoma dan derajat WHO tidak terdapat perbedaan yang bermakna ($p= 1,000$; $p= 0,657$; $p= 0,354$; $p= 0,538$).

Simpulan—Penelitian saat ini menunjukkan frekuensi status metilasi gen promotor MGMT pada astrositoma sedikit berbeda dengan berbagai penelitian lain sebelumnya yaitu hipermetilasi hanya terjadi pada astrositoma derajat rendah. Penelitian ini merupakan penelitian pertama di Indonesia yang melaporkan gambaran status metilasi gen promotor MGMT pada pasien astrositoma.

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collected including 7 low-grade and 6 high-grade astrocytomas. The MGMT gene promoter was methylated in 1/13 cases using MS-PCR and 4/13 cases using MS-HRM. All methylated cases were low-grade astrocytoma. There was significant association between methylation status of MGMT gene promoter with degree of malignancy which is 4/7 samples hypermethylated in low-grade with no hypermethylation in high-grade astrocytomas ($p=0.049$). While other factors like age, sex, KPS and astrocytomas location have no significant association ($p= 1,000$; $p= 0,657$; $p= 0,354$; $p= 0,538$). Conclusions— The present study showed difference of methylation of MGMT gene promoter in astrocytomas with others studies which is hypermethylated MGMT only found in low grade astrocytomas. Our study was the first to report the frequency of MGMT promoter methylation among Indonesian astrocytoma patients.,

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