Kadar O6-metilguanin dna methyltransferase (MGMT) sebagai prediktor respon high grade glioma terhadap radiasi = O6-metilguanin dna metiltransferase (MGMT) concentration as a predictor of high grade glioma response to radiation

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Abstrak

Tujuan dan latar belakang : High grade glioma mecakup hanya 2% dari seluruh kanker, namun memiliki morbiditas dan mortalitas yang tinggi walaupun dengan menggunakan pendekatan terapi multimodal menggunakan kombinasi modalitas operasi, radiasi, kemoterapi dan targetd therapy. Penelitian ini bertujuan untuk mengetahui korelasi kadar MGMT, sebuah protein repair, yang diperiksa menggunakan teknik ELISA dengan respon tumor terhadap radiasi pada High Grade Glioma sehingga diharapkan dapat menambah pemahaman mengenai sifat biomolekuler dari High grade Glioma.
Metode : Studi ini merupakan sebuah studi restrospektif yang melibatkan 14 pasien yang telah didiagnosa sebagai High Grade Glioma berdasarkan histopatologi dan telah mendapatkan radiasi postoperasi dengan dan/atau tanpa chemosensitizer temozolomide di Departemen Radioterapi RSUPN Cipto Mangunkusumo dari tahun 2004-2015. MGMT diperiksa dengan teknik ELISA dari jaringan tumor yang sudah diparafinisasi. Respon tumor dihitung berdasarkan perubahan volume tumor pada imaging CT/MRI pre dan pasca radiasi.
Hasil: Rerata kada MGMT adalah 184 (160-206) pg/mL. Rerata penyusutan tumor adalah 10,64% (-75.64-80.20%). Tidak didapatkan korelasi antara kadar MGMT dengan respon tumor, dengan r= 0.065 (p=0.825). Pada kelompok yang hanya mendapat radiasi didapatkan r= 0.199 (p=0.607) dan pada kelompok yang mendapat kemoradiasi dengan TMZ didapatkan korelasi negatif dengan r= -0,447 (p=0.45).
Kesimpulan : Tidak ada korelasi antara kadar MGMT dengan respon radiasi. Baik pada kelompok yang mendapatkan radiasi saja ataupun pada kelompok yang mendapatkan kemoradiasi dengan TMZ.
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Purpose and background : High Grade Glioma comprises just 2% of all cancer, but it disproportionally has the 6th lowest survival of all cancer found. Despite combined multimodality approach that has been used by clinician which can be the combination of two or more modalities of such : surgery, radiation, chemotherapy and targeted therapy, the mortality and morbidity of HGG remains high. This study aims to know the correlation between MGMT protein expression, a repair protein well known in glioma, with the radiation response, in order to gain more knowledge of the bio molecular behavior of HGG.
Material and Methods : This study is a retrospective study that involves 14 patients which were diagnosed as HGG based on histopathological findings and received postoperative radiation with or without concurrent Temozolomide (TMZ) at the Radiotherapy Department of Cipto Mangunkusumo Hospital from 2004-2015. Tumor MGMT concentration was quantified by Enzyme-Linked Immunosorbent Assay from Formalin-Fixed Paraffin-Embedded (FFPE) tissue. Tumor response was evaluated by comparing pre and post radiation tumor volume by CT and MRI.
Result: MGMT concentration was 184 (160-206) pg/mL. Mean tumor volume shrinkage was 10,64% (-75.64-80.20%). There were no correlation between MGMT concentration and tumor response (r= 0.065,

p=0.825). The sample was split according to use of TMZ. In the group that had radiation only, the correlation between MGMT concentration and tumor response was not significant (r= 0.199, p=0.607). In the chemoradiation group there was a moderate negative correlation, but was not significant (r= -0,447, p=0.45).

Conclusion: MGMT protein expression was not correlated with the tumor radiation response. There was a negative moderate correlation between MGMT concentrasion and tumor response in patients who underwent chemoradiation with TMZ, but this correlation was not statistically significant.