Perubahan rasio choline/water pada magnetic resonance spectroscopy sebagai faktor prediksi awal respons sitostatik pasien kanker payudara = Changes of choline water ratio by using magnetic resonance spectroscopy as an early predictive factor of cytostatic response in breast cancer patients / Sawitri Darmiati

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Abstrak

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Latar belakang: Respons tumor setelah pemberian sitostatik sebagai kemoterapi neoajuvan pada pasien kanker payudara masih belum memuaskan dan respons tumor baru dapat dinilai setelah siklus ke-3; untuk mengurangi efek samping sitostatik dan penghematan biaya bagi yang tidak respons dibutuhkan faktor prediksi respons tumor lebih awal.
Tujuan penelitian: Untuk mengetahui apakah perubahan rasio choline/water pada pemeriksaan magnetic resonance spectroscopy (MRS) dapat digunakan sebagai faktor prediksi awal respons tumor pasien kanker payudara yang memperoleh sitostatik sebagai kemoterapi neoajuvan dan menganalisis korelasi persentase perubahan rasio choline/water eksternal dengan internal.
Bahan dan cara: Penelitian dilaksanakan di Rumah Sakit Umum Pusat Nasional Cipto Mangunkusumo (RSCM) pada bulan Agustus 2011 sampai April 2014. Subjek memperoleh sitostatik sebagai kemoterapi neoajuvan. Pemeriksaan MRI/MRS 1,5 T dilakukan sebelum sitostatik I, 20 atau 21 hari setelah sitostatik I dan setelah sitostatik III, menggunakan program syngo-GRACE untuk MRS. Tumor diukur berdasarkan RECIST 1.1. Respons tumor ≥ 30% dinyatakan positif, dan < 30% dinyatakan negatif. Hasil: Diperoleh 40 subjek dengan kanker payudara ukuran tumor ≥ 5 cm tanpa ulkus respons tumor positif 47,5%, peningkatan rasio choline/water eksternal 35% dan choline/water internal 42,5%. Peningkatan rasio choline/water eksternal pada MRS I- MRS II pada hari ke-20 atau ke-21 setelah pemberian sitostatik 1 menunjukkan respons tumor positif, RR=0,49 (IK 0,26-0,90) terutama untuk stadium < IIIC. Pada peningkatan rasio choline/water internal RR=0,54 (IK 0,28-1,04) dan penurunan nilai Apparent Diffusion Coefficient (ADC) RR= 0,51 (IK 0,23-1,13), didapatkan hubungan yang sama tetapi lebih lemah. Didapatkan pula korelasi sedang arah positif antara persentase perubahan rasio choline/water eksternal dengan persentase perubahan rasio choline/water internal (r=0,572, p=0,000). Derajat keganasan, Ki67, Bcl2 dan MVD tidak dapat digunakan sebagai faktor prediksi respons tumor. Pada Ki67 sama dengan atau lebih dari 14%, masih diperoleh repons tumor positif sedangkan pada Ki67 kurang dari 14%, tidak ditemukan respon tumor positif.
Simpulan: Peningkatan rasio choline/water eksternal pada MRS I-MRS II pada hari ke-20 atau ke-21 setelah pemberian sitostatik 1 sebagai kemoterapi neoajuvan dapat memprediksi pengecilan tumor setelah sitostatik III sama dengan atau lebih besar dari 30% terutama untuk stadium < IIIC. Perubahan rasio choline/water eksternal dan internal dapat digunakan untuk memprediksi respons tumor setelah pemberian sitostatik.;
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ABSTRACT
Background : Cytostatics administration as neoadjuvant chemotherapy does not provided satisfactory tumor

response in breast cancer patients and could be asses after 3rd cycle. To minimize the side effects and cost of cytostatics, early predictive factor of tumor response following neoadjuvant therapy in breast cancer patients is required. Objectives: The purpose of this study was, to asses of choline/water ratio by using magnetic resonance spectroscopy (MRS) as an early predictive factor of cytostatics response after neoadjuvant therapy in breast cancer patients, secondly to analyze the correlation between external choline/water ratio and internal choline/water ratio.
Material and method: This study was conducted at Cipto Mangunkusumo National General Hospital since August 2011 to April 2014. Subjects received cytostatics as neoadjuvant chemotherapy underwent MRI/MRS prior to cytostatics I, 20/21 days after having cytostatics I and after cytostatics III. MRI 1.5 T was used for MRI examination and syngo-GRACE program for MRS. Tumor measurement was based on RECIST 1.1, tumor response of ≥ 30% is considered positive, and < 30% is considered negative.
Results: Among 40 non-ulcerating breast cancer subjects with tumor size of more or equal to 5 cm, 47.5% show positive response. MRS I and II showed escalation of external choline/water ratio on days 20/21 after the introduction of cytostatic I as neoadjuvant treatment, which could be used to predict tumor shrinkage after cytostatic III as high as 30% or more, RR = 0.49 (CI 0.26 - 0.90), especially for < IIIC stage. Changes of internal choline/water ratio, RR= 0.54 (CI 0.28 - 1.04) and Apparent Diffusion Coefficient (ADC) changes, RR= 0.51 (CI 0.23-1.13) show similar result but less related. A positive moderate correlation between changes of external choline/water ratio and changes of internal choline/water ratio is seen (r=0,572, p=0,000). No correlation between degree of malignancy, Bcl2, Ki67 dan MVD with tumor response. Changes of choline/water ratio combined with Ki67 higher than or equal with 14% could give positive tumor response, on the other hand, declining of choline/water ratio combined with Ki67 less than 14%, no positive tumor response could be found. Conclusion: Increased of external choline/water ratio on MRS I-MRS II on day 20 or 21 following cytostatic 1 as neoadjuvant chemotherapy can predict tumor shrinkage following cytostatic III of equal or more than 30%, especiallyfor < IIIC stage. Changes of external and internal choline/water ratio could be used to predict tumor response following cytostastic administration.,
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