Hubungan kadar C-Reactive Protein dengan indeks massa otot skeletal pada pasien metastasis sistem saraf pusat = Association between C-Reactive Protein level with skeletal muscle mass index in central nervous system metastases patients

Rizka Hanifa, author

Abstrak

Latar Belakang: Diperkirakan 20-40% pasien kanker mengalami metastasis ke sistem saraf pusat (SSP). Kondisi inflamasi sistemik pada kanker yang dimediasi sitokin berkaitan dengan penurunan massa otot. Pada kondisi inflamasi, sel hepatosit terstimulasi untuk memproduksi protein fase akut c-reative protein (CRP). Kadar CRP di sirkulasi mengalami peningkatan pada lebih dari 50% pasien keganasan. CRP diperkirakan berhubungan dengan penurunan massa otot dan menjadi prediktor dini dalam kehilangan jaringan lean. Penelitian ini dilakukan untuk mengetahui hubungan kadar CRP dengan indeks massa otot skeletal (skeletal muscle mass index, SMI) pada pasien metastasis SSP. Metode: Penelitian ini adalah studi potong lintang pada pasien kanker dengan metastasis SSP di RSCM. Karakteristik subjek berupa usia, jenis kelamin, tipe metastasis, lokasi tumor primer, defisit neurologis, status performa Karnofsky, penyakit komorbid, penyakit infeksi, terapi glukokortikoid, sedang menjalani kemoterapi, radioterapi, dan tindakan bedah, indeks massa tubuh (IMT), status gizi berdasarkan IMT dan kriteria ASPEN, asupan energi, asupan protein, kadar CRP, dan nilai SMI. Dilakukan analisis hubungan kadar CRP dengan SMI.
Hasil: Terdapat 57 pasien yang mengalami metastasis SSP. Mayoritas subjek perempuan (56,1%). Median usia 47 tahun. Lokasi metastasis lebih banyak ditemukan di otak (56,1%), tipe metastasis berdasarkan lokasi susunan saraf terbanyak adalah sinkronus (86%), seluruh subjek merupakan oligometastasis, dan lokasi tumor primer mayoritas berasal dari nasofaring (17,5%), payudara (15,8%), dan paru (14%). Defisit neurologis terbanyak yaitu nyeri kanker (68,4%), nyeri kepala (56,1%), dan kelemahan anggota gerak (43,9%). Kelemahan anggota gerak mayoritas hemiparesis (22,8%). Sebagian besar status performa Karnofsky pasien terganggu sedang (45,6%), 63,2% subjek tidak memiliki penyakit komorbid, 68,4% tidak memiliki penyakit infeksi, 52,6% tidak dalam terapi glukokortikoid, 75,4% subjek tidak sedang menjalani kemoterapi, masing-masing 1,8% subjek sedang menjalani radioterapi dan tindakan bedah. Rerata IMT estimasi 21,28 kg/m2 dan mayoritas status gizi berdasarkan IMT estimasi adalah berat badan normal (43,9%). Berdasarkan kriteria ASPEN, mayoritas termasuk malnutrisi sedang (49,1%) dan berat (31,6%). Rerata asupan energi 19 kkal/kgBB dan median asupan protein 0,6 g/kgBB. Median kadar CRP 46,6 mg/L dan 96,5% subjek mengalami peningkatan kadar CRP. Rerata SMI seluruh subjek yaitu 6,17 kg/m2, rerata SMI laki-laki 7,2 kg/m2 sedangkan rerata SMI perempuan 5,4 kg/m2. Terdapat korelasi negatif lemah (r=-0,373) yang bermakna secara statistik (p=0,005) antara kadar CRP dengan SMI pasien metastasis SSP .
Kesimpulan: Terdapat korelasi yang bermakna antara kadar CRP dengan SMI pada pasien metastasis SSP.
.....Background: It is estimated that 20-40% of cancer patients experience metastases to the central nervous system (CNS). Systemic inflammatory conditions in cancer mediated by cytokines are associated with a decrease in muscle mass. In inflammatory conditions, hepatocyte cells are stimulated to produce the acute-phase protein called c-reactive protein (CRP). Circulating CRP levels increase in over 50% of cancer patients. CRP is believed to be related to a decrease in muscle mass and serves as an early predictor in lean

tissue loss. This study was conducted to determine the relationship between CRP levels and the skeletal muscle mass index (SMI) in patients with CNS metastases. Methods: This study is a cross-sectional study on cancer patients with CNS metastases at RSCM. Subject characteristics include age, gender, metastases type, primary tumor location, neurological deficits, Karnofsky performance status, comorbidities, infectious diseases, glucocorticoid therapy, undergoing chemotherapy, radiotherapy, and surgery, body mass index (BMI), nutritional status based on BMI and ASPEN criteria, energy intake, protein intake, CRP levels, and skeletal muscle mass index (SMI). An analysis of the relationship between CRP levels and SMI was conducted.
Results: There were 57 patients with CNS metastases. Most subjects were female (56.1%). The median age was 47 years. Metastases was more commonly found in the brain (56.1%), and the most common type of metastasis based on the nervous system location was synchronous (86%). All subjects had oligometastasis, and most primary tumor locations were in the nasopharynx (17.5%), breast (15.8%), and lungs (14%). The most common neurological deficits were cancer pain (68.4%), headaches (56.1%), and limb weakness (43.9%). Most limb weakness was hemiparesis (22.8%). Most Karnofsky performance status was moderately impaired (45.6%), 63.2% had no comorbidities, 68.4% had no infectious diseases, 52.6% were not on glucocorticoid therapy, 75.4% were not undergoing chemotherapy, and 1.8% each were undergoing radiotherapy and surgery. The estimated mean BMI was 21.28 kg/m2, with the majority having a normal weight (43.9%). According to ASPEN criteria, the majority were moderately malnourished (49.1%) and severely malnourished (31.6%). The mean energy intake was 19 kcal/kgBW, and the median protein intake was 0.6 g/kgBW. The median CRP level was 46.6 mg/L, with 96.5% of subjects experiencing an increased CRP level. The mean SMI for all subjects was 6.17 kg/m2, with male subjects having a mean SMI of 7.2 kg/m2 and female subjects having a mean SMI of 5.4 kg/m2. There was a weak negative correlation (r=-0.373) that was statistically significant (p=0.005) between CRP levels and SMI in patients with CNS metastases.
Conclusion: CRP levels are correlated with SMI in patients with CNS metastasis. Higher CRP levels are associated with lower SMI in patients with CNS metastases.