Ketebalan Otot Adductor Pollicis, Asupan Energi, Albumin Serum dan Rasio Neutrofil-Limfosit sebagai Prediktor Mortalitas Pasien Sakit Kritis = Adductor Pollicis Muscle Thickness, Energy Intake, Serum Albumin, and Neutrophil-Lymphocyte Ratio as Predictors of Mortality in Critically Ill Patients

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Abstrak

Pendahuluan: Pasien sakit kritis umumnya mengalami penyusutan otot, pemberian asupan energi yang tidak memadai, dan hipoalbuminemia, yang semuanya dikaitkan dengan luaran yang buruk. Ketebalan otot adduktor pollicis (KOAP) dapat digunakan untuk menilai status gizi. Penilaian status gizi tidak dapat mengabaikan pentingnya menilai proses inflamasi. Rasio neutrofil terhadap limfosit (neutrophil-to-lymphocyte ratio atau NLR) baru-baru ini diperkenalkan sebagai pananda inflamasi. Penelitian ini menganalisis hubungan KOAP, asupan energi, albumin serum, dan NLR dengan mortalitas 28 hari.

Metode: Studi kohort prospektif dilakukan di unit perawatan intensif (intensive care unit atau ICU) Rumah Sakit Cipto Mangunkusumo, dari Februari hingga Maret 2020. KOAP diukur dengan alat caliper. Asupan energi dihitung berdasarkan jumlah kalori yang diterima pasien. Hitung jenis sel darah putih dan albumin serum diperiksa saat masuk ICU. Luaran utama adalah mortalitas 28 hari.

Hasil: Penelitian ini melibatkan 49 pasien dengan angka kematian 20,4%. Rerata asupan energi hari pertama adalah 552,2 ± 235,6 kkal atau 47,0% dari target. Nilai median NLR pada semua subjek adalah 13,28 (minimal 3,50 - maksimal 59,56). Ada hubungan yang bermakna antara kelompok subjek dengan NLR tinggi (13,28) dan kelompok NLR rendah (<13,28) terhadap mortalitas (p = 0,031), tetapi tidak ada perbedaan yang bermakna secara statistik antara APMT (24,25 ± 4,65 vs. 24,97 ± 3,59 mm, p = 0,596), asupan energi (kategori asupan energi kurang sebagai pembanding), dan rerata albumin serum (2,67 ± 0,54 vs. 2,64 ± 0,80 g/dl, p = 0,928). Analisis multivariat untuk menilai kemampuan gabungan variabel independen diperoleh nilai area under curve (AUC) sebesar 78,7%.

Kesimpulan: Kombinasi KOAP, asupan energi, albumin serum, dan NLR mempunyai kemampuan yang cukup memuaskan dalam memprediksi mortalitas pada pasien sakit kritis.
.....Introduction: Critically ill patients usually experience muscle wasting, inadequate energy intake and hypoalbuminemia, all of which were associated with poor outcomes. Adductor pollicis muscle thickness (APMT) can be used to assess nutritional status. Assessment of nutritional status cannot ignore the importance of inflammatory process. Neutrophil-to-lymphocyte ratio (NLR) was recently introduced as an inflammatory biomarker. This study analyze the relationship between APMT, energy intake, serum albumin, and NLR with 28-day mortality.

Methods: A prospective study was conducted in intensive care unit (ICU)’s of a tertiary care hospital, Indonesia, from February to March 2020. APMT was measured at admission with a caliper. Energy intake

was calculated based on the number of calories received by the patient. Albumin serum and leukocyte differential count were checked at ICU admission. The primary outcome was 28-day mortality.

Results: This study involved 49 patients with mortality rate of 20.4%. Mean energy intake at first day was 552.2±235.6 kcal or 47.0% of the target. Median value of NLR of all subjects was 13.28 (minimum 3.50 – maximum 59.56). There was statistically significant relationship between non-survivor and survivor group with high NLR (13.28) and low NLR group (<13.28) for mortality (p=0.031), but there was no statistically significant difference between APMT (24.25±4.65 vs. 24.97±3.59 mm, p=0.596), energy intake (less energy intake category as a comparison), and mean serum albumin (2.67±0.54 vs. 2.64±0.80 g/dl, p=0.928). Multivariate analysis to assess combined ability of independent variables to predict mortality obtained a satisfactory area under curve (AUC) value of 78.7%.

Conclusion: The combination of APMT, energy intake, serum albumin, and NLR has a satisfactory ability in predicting mortality in critically ill patients.