

# Kadar CD4 dan CD8 darah sebagai prediktor mortalitas 30 hari pada pasien pneumonia berat di Rumah Sakit Umum Pusat Nasional dr. Cipto Mangunkusumo Jakarta = Blood CD4 and CD8 count as predictors of 30 days mortality in severe pneumonia patients at the dr. Cipto Mangunkusumo National General Hospital Jakarta

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## Abstrak

**Latar Belakang.** Pneumonia berat masih menjadi masalah kesehatan utama di Indonesia dan dunia. Sistem imun diketahui memiliki peranan penting dalam patogenesis pneumonia, namun tidak banyak studi yang menilai hubungan antara kadar CD4 dan CD8 darah dengan mortalitas akibat pneumonia berat pada pasien dengan status HIV negatif.

**Tujuan.** Mengetahui data hubungan dan nilai potong kadar CD4 dan CD8 darah dengan angka mortalitas 30 hari pada pasien pneumonia berat di RSCM.

**Metode.** Penelitian berdesain kohort prospektif yang dilakukan di ruang rawat intensif RSCM periode Juni-Agustus 2020. Keluaran berupa kesintasan 30 hari, nilai titik potong optimal kadar CD4 dan CD8 darah untuk memprediksi mortalitas 30 hari dan risiko kematian. Analisis data menggunakan analisis kesintasan Kaplan-Meier, kurva ROC dan multivariat regresi Cox.

**Hasil.** Dari 126 subjek, terdapat 1 subjek yang *loss to follow up*. Mortalitas 30 hari didapatkan 26,4%. Nilai titik potong optimal kadar CD4 darah 406 sel/ $\hat{I}^1/4L$  (AUC 0,651,  $p=0,01$ , sensitivitas 64%, spesifisitas 61%) dan kadar CD8 darah 263 sel/ $\hat{I}^1/4L$  (AUC 0,639,  $p=0,018$ , sensitivitas 62%, spesifisitas 58%). Kadar CD4 darah  $< 406$  sel/ $\hat{I}^1/4L$  memiliki *crude* HR 2,696 (IK 95% 1,298-5,603) dan kadar CD8 darah  $< 263$  sel/ $\hat{I}^1/4L$  memiliki *crude* HR 2,133 (IK 95% 1,035-4,392) dengan *adjusted* HR 2,721 (IK 95% 1,343-5,512). Bila sepsis dan tuberkulosis paru ditambahkan dengan kadar CD4 darah dan CD8 darah, didapatkan nilai AUC 0,752 ( $p=0,000$ ).

**Kesimpulan.** Kadar CD4 dan CD8 darah memiliki akurasi yang lemah dalam memprediksi mortalitas 30 hari pasien pneumonia berat. Kadar CD4 darah  $< 406$  sel/ $\hat{I}^1/4L$  dan kadar CD8 darah  $< 263$  sel/ $\hat{I}^1/4L$  memiliki risiko mortalitas 30 hari yang lebih tinggi.

.....**Background.** Severe pneumonia is a major health problem in Indonesia and the world. The immune system is known to play an important role in the pathogenesis of pneumonia, but few studies have assessed the relationship between blood CD4 and CD8 count and mortality from severe pneumonia in patients with negative HIV status.

**Objectives.** Knowing the correlation data and the cut-off value of blood CD4 and CD8 count with a 30-days mortality rate in severe pneumonia patients at RSCM.

**Methods.** This study is a prospective cohort study conducted at RSCM intensive care rooms from June to August 2020. The outputs were 30-days survival rate, optimal cut-off value for blood CD4 and CD8 count to predict 30-days mortality and mortality risk. Data analysis used Kaplan-Meier survival, ROC curves and multivariate Cox regression analysis.

**Results.** Of the 126 subjects, there was 1 subject who lost to follow up. The 30-days mortality rate was 26.4%. The optimal cut-off value for blood CD4 count was 406 cells/ $\hat{I}^1/4L$  (AUC 0.651,  $p=0.01$ , sensitivity

64%, specificity 61%), blood CD8 count was 263 cells/ $\mu$ L (AUC 0.639,  $p=0.018$ , sensitivity 62%, specificity 58%). CD4 blood count  $< 406$  cells/ $\mu$ L had a crude HR of 2.696 (95% CI 1.298-5.603) and blood CD8 count  $< 263$  cells/ $\mu$ L had a crude HR of 2.133 (95% CI 1.035-4.392) with an adjusted HR of 2.721 (CI 95% 1,343-5,512). If sepsis and pulmonary tuberculosis were added to the blood CD4 and CD8 count, the AUC value was 0.752 ( $p=0.000$ ).

Conclusion. Blood CD4 and CD8 count had poor accuracy in predicting 30-days mortality in patients with severe pneumonia. The group with blood CD4 count  $< 406$  cells/ $\mu$ L and blood CD8 count  $< 263$  cells/ $\mu$ L had a higher risk of 30-days mortality.