

## INTISARI

**Latar belakang:** Interleukin-6 (IL-6) memiliki peranan penting dalam etiopatogenesis anemia pada keganasan. Terapi anemia pada pasien dengan keganasan adalah transfusi PRC. Akumulasi IL-6 yang dihasilkan oleh leukosit dalam PRC dapat terjadi selama proses penyimpanan dan meningkatkan risiko terjadinya reaksi transfusi. Leukodepleksi merupakan proses untuk menurunkan jumlah leukosit kontaminan sehingga diharapkan dapat menurunkan akumulasi IL-6 dalam PRC dan meminimalisasi reaksi transfusi.

**Tujuan:** Menganalisis perbedaan rerata delta kadar IL-6 pascatransfusi PRC leukodepleksi dibandingkan non-leukodepleksi pada pasien dewasa dengan keganasan.

**Metode:** Desain penelitian ini adalah *quasi experimental*. Subjek penelitian adalah pasien dewasa dengan keganasan di Instalasi Kanker Terpadu "TULIP" RSUP Dr. Sardjito Yogyakarta yang mendapatkan transfusi PRC leukodepleksi atau non-leukodepleksi dan memenuhi kriteria inklusi. Dilakukan pemeriksaan darah lengkap dan pemeriksaan kadar IL-6 yang diambil pra dan satu jam pascatransfusi PRC leukodepleksi atau non-leukodepleksi. Kadar IL-6 diukur menggunakan metode ELISA *sandwich*. Rerata delta kadar IL-6 dihitung dari selisih antara kadar IL-6 pratransfusi dan pascatransfusi. Perbedaan rerata delta kadar IL-6 kelompok transfusi PRC leukodepleksi dibandingkan dengan non-leukodepleksi, dan dianalisis menggunakan uji Mann-Whitney.

**Hasil :** Subjek penelitian berjumlah 68 pasien, 33 pasien pada kelompok leukodepleksi dan 35 pasien kelompok non-leukodepleksi. Rerata umur subjek penelitian adalah  $53,99 \pm 12,29$  tahun. Tidak terdapat perbedaan bermakna berdasarkan usia ( $p=0,276$ ), jenis kelamin ( $p=0,509$ ), jenis keganasan ( $p=0,140$ ), dan jumlah kantong yang ditransfusikan di antara kedua kelompok. Median kadar IL-6 pascatransfusi lebih rendah secara bermakna pada kelompok leukodepleksi dibandingkan dengan non-leukodepleksi (1,9 pg/mL vs 3,4 pg/mL;  $p=0,035$ ). Median delta kadar IL-6 lebih rendah secara bermakna pada kelompok leukodepleksi dibandingkan non-leukodepleksi (-0,3 vs -0,1;  $p=0,047$ ). Didapatkan perbedaan bermakna delta kadar IL-6 berdasarkan lama simpan PRC pada kelompok leukodepleksi ( $p=0,002$ ) dan non-leukodepleksi ( $p=0,043$ ), dan ditemukan peningkatan delta IL-6 semakin tinggi dengan semakin lama simpan produk PRC.

**Simpulan :** Median delta kadar IL-6 pascatransfusi PRC leukodepleksi lebih rendah secara bermakna dibandingkan non-leukodepleksi.

**Kata kunci:** delta interleukin-6, anemia pada keganasan, transfusi, *packed red cell*, leukodepleksi

## ABSTRACT

**Background:** Interleukin-6 (IL-6), have an important role in the etiopathogenesis of anemia in malignancies. Treatment of anemia in patients with malignancy is PRC transfusion. Accumulation of IL-6 produced by leucocytes in PRC can occur during the storage process and increase the risk of transfusion reactions. Leukodepletion is a process to reduce the number of contaminant leucocytes so that it is expected to reduce the accumulation of IL-6 in PRC and minimize transfusion reactions.

**Objective:** This study aimed to analyze differences in mean delta levels of IL-6 posttransfusion PRC leukodepleted compared non-leukodepleted in adult patients with malignancy.

**Method:** This was a quasi experimental study. Subjects were adult patients with malignancy at the "TULIP" Integrated Cancer Institute RSUP Dr. Sardjito Yogyakarta, who received leukodepleted or non-leukodepleted PRC transfusion and met the inclusion criteria. The examination for complete blood count and IL-6 levels were performed pre and one hour post PRC's transfusion. IL-6 levels were measured using the sandwich ELISA method. Mean delta levels of IL-6 was calculated from the difference between pre and post transfusion IL-6 levels. The differences in mean delta levels of IL-6 in the leukodepleted PRC transfusion group were compared with non-leukodepleted group, and were analyzed using the Mann-Whitney test.

**Results :** There were 68 subjects of the study with 33 and 35 subject in leucodepleted and non-leucodepleted group respectively. The mean age of the subjects was  $53,99 \pm 12,29$  years. There was no significant differences based on age ( $p=0,276$ ), sex ( $p=0,509$ ), type of malignancy ( $p=0,140$ ), and the number of bags transfused between both groups. The median post transfusion IL-6 levels were significantly lower in leukodepleted group than non-leukodepleted group (1,9 pg/mL vs 3,4 pg/mL;  $p=0,035$ ). Median delta levels of IL-6 were significantly lower in leukodepleted group compared to non-leukodepleted group (-0,3 vs -0,1;  $p=0,047$ ). There was significant differences in delta IL-6 levels based on the long storage period PRC in the leukodepleted groups ( $p=0,002$ ) and non-leukodepleted ( $p=0,043$ ), and it was found that the increase in delta IL-6 was higher with the longer the PRC product was stored.

**Conclusion :** Median delta levels of IL-6 posttransfusion in leukodepleted group were significantly lower compared to non-leukodepleted group.

**Keywords :** Interleukin-6 delta, anemia in malignancy, transfusion, packed red cell, leukodepletion.