

Sensitivity of C-Reactive Protein Serum Levels Compared to White Blood Cell Count as a Predictor of Surgical Site Infection on Patients Underwent Major Surgery in Sardjito General Hospital Yogyakarta

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Abstract

Background. Early diagnosis and treatment of infections is critical in the care of surgery patients. Excluding infections from the differential diagnosis avoids the use of potentially harmful antibiotics and just as importantly clarifies the situation. A positive blood culture usually requires 24 hours or longer before results can be obtained. Surgeon are therefore always on the alert for a method that promises to be either sensitive or spesific for the detection of infection.

Aims. This study aims to determine sensitivity of C-Reactive Protein (CRP) serum levels compared to white blood cell count as a predictor of surgical site infection on patients underwent major surgery in Sardjito General Hospital Yogyakarta

Methods. A descriptive analytical study with a prospective observational design. Patients who underwent major surgery between October until December 2011, conducted the informed consent, clinical examination and the number of WBC prior to surgery procedure, eligible patients were followed until 30 days post operatively. On 3rd day post operative day we performed WBC and CRP serum levels examination, patients who suffered from surgical site infection (SSI), based on Centers for Disease Control (CDC) criteria, performed bacterial culture examination from the surgical wound.

Results. A total of 49 patients met the inclusion criteria, consisted of 22 men and 27 women. Found 16 cases (32,7%) suffered from SSI, the SSI consist of 12 cases of deep types and 4 cases of superficial types. Laboratory examination on 3rd post operative day, found 9 patients had an abnormal WBC, 6 patients of them experienced the SSI, there were 9 patients who had CRP serum levels above 8 mg/dL, 7 of them suffered SSI. Obtained sensitivity values of CRP serum levels in predicting SSI by 43,75% and specificity 93,93%, while the sensitivity and specificity of each WBC was 31,25% and 87,87%.

Conclusions. CRP has better sensitivity and specificity to predict surgical site infection in patients underwent major surgery procedure compared to WBC.

Keywords: C-Reactive Protein (CRP) serum levels, white blood cell count (WBC), surgical site infection (SSI).

**Kepekaan C-Reactive Protein Serum Dibandingkan Jumlah Leukosit
Sebagai Prediktor Infeksi Luka Operasi Pada Pasien Pasca Operasi Mayor
Di RSUP DR. Sardjito Yogyakarta**

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Abstrak

Latar Belakang. Diagnosis dan terapi awal suatu infeksi merupakan hal yang penting dalam perawatan pasien bedah. Diagnosis suatu infeksi yang tepat akan menghindarkan dari penggunaan antibiotik yang tidak sesuai indikasi. Kultur darah yang merupakan baku emas untuk diagnosis infeksi membutuhkan waktu setidaknya 24 jam sampai hasil kultur diperoleh. Ahli bedah diharapkan terbuka terhadap perkembangan metode yang menjanjikan, memiliki sensitivitas dan spesifitas lebih baik untuk memprediksi infeksi luka operasi.

Tujuan. Penelitian ini bertujuan untuk mengetahui kepekaan *C-Reactive Protein* (CRP) serum dibandingkan jumlah leukosit sebagai prediktor Infeksi Luka Operasi (ILO) pada pasien pasca operasi mayor di RSUP DR. Sardjito Yogyakarta

Metode. Penelitian ini adalah penelitian deskriptif analitik dengan rancangan prospektif observational. Pasien yang menjalani operasi mayor antara Oktober sampai dengan Desember 2011, dilakukan *informed consent*, pemeriksaan klinis dan jumlah leukosit pre operasi, pasien yang memenuhi kriteria diikuti sampai 30 hari pasca operasi. Pada hari ke-3 post operasi dilakukan pemeriksaan jumlah leukosit dan kadar *C-Reactive Protein* (CRP) serum, pasien yang masuk dalam kriteria infeksi luka operasi (ILO) sesuai kriteria *Centers for Disease Control* (CDC) dilakukan pemeriksaan kultur dari luka operasi.

Hasil. Sebanyak 49 pasien memenuhi kriteria inklusi, terdiri dari 22 orang laki-laki dan 27 perempuan. Ditemukan 16 kasus (32,7%) terjadi ILO, terdiri dari 12 kasus ILO tipe *superficial* dan 4 kasus ILO tipe *deep*. Pemeriksaan laboratorium hari ke-3 pasca operasi, ditemukan 9 pasien memiliki jumlah leukosit abnormal, 6 pasien diantaranya mengalami ILO, terdapat 9 pasien yang memiliki kadar CRP serum >8 mg/dL, 7 diantaranya mengalami ILO. Didapatkan nilai sensitivitas kadar CRP serum dalam prediksi infeksi luka operasi sebesar 43,75% dan spesifitas 93,93 %, sedangkan sensitivitas dan spesifitas jumlah leukosit masing-masing adalah 31,25% dan 87,87%.

Simpulan. Kepekaan pemeriksaan kadar *C-Reactive Protein* (CRP) serum lebih baik sebagai prediktor terjadinya infeksi luka operasi pada pasien pasca operasi mayor dibandingkan dengan jumlah leukosit

Kata kunci: Kadar *C-Reactive Protein* (CRP) serum, Jumlah leukosit, Infeksi luka operasi (ILO).