



## INTISARI

**Latar belakang:** Inflamasi pada sepsis menginduksi terjadinya abnormalitas koagulasi dan gangguan mikrosirkulasi akibat mikrotrombus. Mikrotrombus dihasilkan dari aktivasi platelet dan dapat menyebabkan kerusakan organ pada akhir patofisiologi sepsis. Fraksi Platelet Imatur (*IPF*) merupakan persentase retikulat platelet yang berhubungan dengan perkembangan serta mencerminkan keparahan sepsis.

**Tujuan:** Penelitian ini bertujuan untuk mengetahui hubungan antara peningkatan *IPF* dan mortalitas pada pasien sepsis.

**Metode Penelitian:** Penelitian ini merupakan penelitian kohort prospektif observasional yang dilakukan di Rumah Sakit Dr. Soedono Provinsi Jawa Timur. Subjek penelitian diambil dengan teknik konsekutif sampai jumlah sampel terhitung terpenuhi. Kriteria inklusi dalam penelitian ini adalah pasien sepsis dengan usia  $\geq 18$  tahun. Kriteria eksklusi dalam penelitian ini adalah pasien hamil, memiliki penyakit gagal hati kronis, gagal ginjal kronis, keganasan yang mempengaruhi sistem koagulasi atau platelet, konsumsi obat yang mengganggu sistem koagulasi seperti aspirin, warfarin, heparin dan kina, tranfusi platelet, *fresh frozen plasma*, atau faktor koagulasi dalam dua hari terakhir dan mengalami kondisi yang meningkatkan pergantian platelet seperti *Immune Thrombocytopenic Purpura*, *Thrombotic Thrombo-cytopenic Purpura*, dan perdarahan masif. Hasil data penelitian dianalisis menggunakan *Receiving Operating Characteristic Curve* (ROC) dan *Youden Index* untuk menentukan *cut-off* optimal *IPF*. Nilai *cut-off IPF* tersebut kemudian dinilai hubungan *IPF* dengan mortalitas pasien sepsis.

**Hasil:** Terdapat 66 sampel dalam penelitian ini. Kurva ROC menunjukkan *cut-off IPF* 5,05% dengan AUC: 0,668 (CI 95% 0,536-0,800) dengan sensitivitas 69,4% dan spesifisitas 63,3%. Pasien dengan *IPF*  $> 5,05\%$  memiliki risiko mortalitas yang lebih tinggi secara bermakna dibandingkan dengan pasien *IPF*  $< 5,05\%$  (RR= 1,89, *p-value* 0,008). Kurva ROC menunjukkan *cut-off* Skor SOFA 6,50 memiliki AUC 0,767 (CI 95%, 0,650-0,883) dengan sensitivitas 83,3% dan spesifisitas 63,3%. Pasien dengan Skor SOFA 6,50 memiliki risiko mortalitas lebih tinggi dengan nilai RR=3,05, *p-value*  $< 0,05$ .

**Kesimpulan:** *IPF*  $> 5,05\%$  memiliki risiko mortalitas lebih tinggi dibandingkan dengan *IPF*  $< 5,05\%$ , namun jika dibandingkan dengan nilai prediksi Skor SOFA. Nilai *IPF* masih dibawah prediksi Skor SOFA terhadap mortalitas pada pasien sepsis.

**Kata Kunci:** *IPF*, Sepsis, Mortalitas



## ***ABSTRACT***

**Background:** Inflammation in sepsis induces coagulation abnormalities and microcirculation disorders due to microthrombus. Microthrombus produced by platelet activation can lead to multiorgan failure at the end of sepsis pathophysiology. Immature Platelet Fraction (IPF) is the percentage of reticulated platelet associated with the development and reflecting the severity of sepsis.

**Objective:** The aim of this study is to find out the link between increased IPF and mortality in patients with sepsis.

**Research Methods:** This research was a prospective observational cohort study that carried out at Dr. Soedono Hospital in East Java Province. Subjects were taken with sequential techniques until the number of samples counted is met. The inclusion criteria in the study were sepsis patients aged  $\geq 18$  years. The exclusion criteria in this study were pregnant patients, patients who had chronic liver failure, chronic kidney disease, consumption of drugs that affected the coagulation or platelet system such as aspirin, warfarin, heparin and kin, transfusion of platelet, fresh frozen plasma, or coagulating factor in the last two days and patients who had conditions that increased the replacement of platelets such as Immune Thrombocytopenic Purpura, Thrombotic Thrombo-cytopenic Purpura, and massive bleeding. The results of the study were analysed using Receiving Operating Characteristic Curve (ROC) and the Youden Index to determine the optimal cut-off of the IPF. The relation between IPF's cut-off values and mortality in patient with sepsis then assessed.

**Results:** There were 66 samples in this study. The ROC curve showed an IPF cut-off of 5.05% AUC: 0.668 (95% CI 0,536-0,800) with a sensitivity of 69.4% and a specificity of 63%. Patients with IPF  $> 5.05\%$  had a significant higher risk of mortality compared to patients with the IPF  $< 5.05\%$  (RR=1.89, p-value 0.008). The ROC curve showed a cut-off SOFA score of 6.50 with an AUC of 0.767 (CI 95%, 0.650-0,883) with a sensitivity of 83.3% and a specificity of 63.3%. Patients with a SOFA Score of 6,50 had a higher risk of mortality with an RR= 3.05, p-value  $< 0,05$ .

**Conclusion:** IPF  $> 5,05\%$  had a higher risk of mortality compared to IPF  $< 5,05\%$ , but when compared with the predictive value of the SOFA Score, the IPF value was still below the predicted SOFA score for mortality in sepsis patients.

**Key Words:** IPF, Sepsis, Mortality