

**RINGKASAN**  
**Perbandingan kadar IFN- $\gamma$  dan IL-10 pada serum maternal antara *early-onset preeclampsia* dengan *late-onset preeclampsia***

Preeklampsia merupakan komplikasi kehamilan yang terjadi pada sekitar 3-9% dari seluruh kehamilan di seluruh dunia. Preeklampsia dibagi menjadi dua klasifikasi berdasarkan patogenesis yang berbeda yaitu *early-onset preeclampsia*, yang muncul sebelum usia kehamilan 34 minggu dan *late-onset preeclampsia*, yang muncul saat atau setelah usia kehamilan 34 minggu

Pada *early-onset preeclampsia*, diyakini terjadi kegagalan invasi trofoblas yang disebabkan oleh imunitas maternal tidak tolerans terhadap antigen fetal. Sedangkan pada *late-onset preeclampsia*, terjadi peningkatan kerentanan vaskular maternal terhadap kondisi inflamasi normal yang terjadi selama kehamilan atau aterosclerosis pada plasenta yang normalnya terjadi pada akhir kehamilan. Kedua patogenesis tersebut masih belum jelas namun keduanya dapat dikaitkan dengan respon imun maternal, salah satunya ketidakseimbangan produksi IFN- $\gamma$  dan IL-10.

Banyak penelitian yang telah dilakukan untuk membandingkan kadar IFN- $\gamma$  dan IL-10 pada preeklampsia dan hamil normal, namun hasil yang didapatkan masih menunjukkan kontroversi, sehingga peneliti ingin tahu perbandingan kadar IFN- $\gamma$  dan IL-10 pada serum maternal yang mengalami *early-onset preeclampsia* dan *late-onset preeclampsia*.

Tujuan dari penelitian ini adalah untuk membandingkan kadar IFN- $\gamma$  dan IL-10 pada serum maternal antara *early-onset preeclampsia* dengan *late-onset preeclampsia*.

Penelitian ini menggunakan rancangan *cross-sectional* dan dilakukan di RSUD dr.Mohammad Soewandhie Surabaya sejak bulan Juni – Agustus 2015. Selama penelitian didapatkan 13 sampel *early-onset preeclampsia*, 13 sampel *late-onset preeclampsia*, 13 sampel hamil normal <34 minggu (kontrol *early*) dan 13 sampel hamil normal  $\geq$ 34 minggu (kontrol *late*). Dilakukan *matching* kelompok kontrol. Kemudian, dilakukan pemeriksaan kadar IFN- $\gamma$  dan IL-10 dari semua sampel serum menggunakan metode ELISA. Kemudian dilakukan analisis statistik.

Berdasarkan hasil analisis statistik, didapatkan didapatkan nilai median kadar IFN- $\gamma$  pada *early-onset preeclampsia* 0 pg/ml (0-149,1 pg/ml), pada *late-onset preeclampsia* 0 pg/ml, pada kelompok kontrol *early* 0 pg/ml (0-56,6 pg/ml), dan pada kelompok kontrol *late* 0 pg/ml (0-92,7 pg/ml). Hal ini kemungkinan terjadi karena kadar IFN- $\gamma$  pada sampel lebih rendah dari ambang batas terendah deteksi kit *ELISA IFN- $\gamma$  human (R&D system inc)*. Sementara itu, nilai median kadar IL-10 pada *early-onset preeclampsia* adalah 91 pg/ml (6,2-163,90 pg/ml), pada *late-onset preeclampsia* 12,9 pg/ml (3,5 – 110,70 pg/ml), pada kontrol *early* 8,9 pg/ml (0-36,5 pg/ml) dan pada kontrol *late* 4,8 pg/ml (0-38,8 pg/ml). Secara statistik, tidak terdapat perbedaan bermakna kadar IFN- $\gamma$  antara *early-onset preeclampsia* dengan *late-onset preeclampsia*, begitu pula dengan kelompok kontrol (harga p = 0,073). Sedangkan, menurut statistik didapatkan perbedaan bermakna kadar IL-10 antara *early-onset preeclampsia* dengan *late-onset preeclampsia*, begitu pula dengan kelompok kontrol (harga p <0,0001).

Kesimpulan, tidak terdapat perbedaan bermakna kadar IFN- $\gamma$  pada serum maternal baik pada kelompok *early-onset preeclampsia* maupun *late-onset preeclampsia*, sedangkan kadar IL-10 pada serum maternal dengan *early-onset preeclampsia* lebih tinggi dibandingkan *late-onset preeclampsia*, begitu pula kadar IL-10 pada serum maternal dengan preeklampsia lebih tinggi dibandingkan hamil normal.

Oleh karena kadar IFN- $\gamma$  pada serum sampel terlalu rendah, sehingga tidak terdeteksi oleh kit *ELISA IFN- $\gamma$  human (R&D system Inc)* yang digunakan. Oleh karena itu kami menyarankan untuk penelitian selanjutnya dapat menggunakan kit *ELISA IFN- $\gamma$  human* yang memiliki ambang batas deteksi kadar IFN- $\gamma$  lebih rendah.

## SUMMARY

### **IFN- $\gamma$ and IL-10 levels in maternal serum between early-onset preeclampsia and late-onset preeclampsia**

Preeclampsia is a pregnancy complication that affect about 3 – 9% of all pregnancies worldwide. Nowadays, preeclampsia was divided into early-onset preeclampsia and late-onset preeclampsia classification based on the pathogenesis of the disease. Early-onset preeclampsia happen before 34 weeks of pregnancy and late-onset preeclampsia happen after 34 weeks of pregnancy.

Altered trophoblast invasion caused by non-tolerance maternal immunity play a role in development of early-onset preeclampsia. Whereas, the increasing of maternal vascular susceptibility to normal inflammation condition that happen during the pregnancy or the atherosclerosis of placenta that normally happen at the end of pregnancy were play a role in development of late-onset preeclampsia. Both pathogenesis was associated to maternal immune response, such as imbalance production of IFN- $\gamma$  and IL-10.

Many study were conducted to compare the IFN- $\gamma$  and IL-10 level between preeclampsia and normal pregnancy, but the results still controversial, so that we want to compare the IFN- $\gamma$  and IL-10 levels in maternal serum between early-onset preeclampsia and late-onset preeclampsia.

The aim of this studi is to compare the IFN- $\gamma$  and IL-10 levels on maternal serum between early-onset preeclampsia and late-onset preeclampsia.

This study used cross-sectional design, and was held on dr. Mohammad Soewandhie hospital, Surabaya, East Java province, Indonesia, from June until August 2015. This research involved 13 pregnant women with early-onset of preeclampsia, 13 pregnant women with late-onset of preeclampsia, 13 pregnant woman with gestasional age <34 weeks (control early), and 13 pregnant woman with gestasional age  $\geq$ 34 weeks (control late), total 52 sample that recruited to this study, the control group were matched. And then, we do ELISA to estimate IFN- $\gamma$  dan IL-10 levels. Then, we do the statistical analysis.

According to statistical analysis, we got median from IFN- $\gamma$  levels on early-onset of preeclampsia is 0 pg/ml (0-149,1 pg/ml), late-onset of preeclampsia is 0 pg/ml, control group of early-onset preeclampsia is 0 pg/ml (0-56,6 pg/ml) and

control group of late-onset preeclampsia group is 0 pg/ml (0-92,7 pg/ml). This result might be happen because the IFN- $\gamma$  levels is below than ELISA kit for IFN- $\gamma$  human (R&D system inc) detection limit threshold. Conversely, median from IL-10 level on early-onset of preeclampsia is 91 pg/ml (6,2-163,90 pg/ml), late-onset of preeclampsia is 12,9 pg/ml (3,5 – 110,70 pg/ml), control group of early-onset preeclampsia is 8,9 pg/ml (0-36,5 pg/ml), and control group of late-onset preeclampsia is 4,8 pg/ml (0-38,8 pg/ml). Statistically, there is no significant different of IFN- $\gamma$  levels between early-onset preeclampsia and late-onset preeclampsia group, so do the control group (p-value= 0,073). Whereas, there is significant different of IL-10 levels between early-onset preeclampsia and late-onset preeclampsia group, so do the control group (p value<0,0001).

Conclusion, there is no significant different of IFN- $\gamma$  levels in maternal serum between early-onset preeclampsia and late-onset preeclampsia, whereas IL-10 levels in maternal serum with early-onset preeclampsia is higher than late-onset of preeclampsia and IL-10 levels in maternal serum with preeclampsia is higher than normal pregnancies..

In this study, the IFN- $\gamma$  levels is below than ELISA kit for IFN- $\gamma$  human (R&D system inc) detection limit threshold. So, we suggest to use ELISA kit for IFN- $\gamma$  human that have lowest detection limit threshold for further study.

## ABSTRAK

Penelitian ini bertujuan untuk membandingkan kadar IFN- $\gamma$  dan IL-10 pada serum maternal antara *early-onset preeclampsia* dengan *late-onset preeclampsia*. Penelitian ini dilakukan di RSUD dr.Mohammad Suwandhie Surabaya sejak Juni – Agustus 2015, menggunakan rancangan *cross-sectional*. Didapatkan 13 sampel *early-onset preeclampsia*, 13 sampel *late-onset preeclampsia*, 13 sampel hamil normal <34 minggu dan 13 sampel hamil normal  $\geq 34$  minggu, total 52 sampel serum yang kemudian dilakukan pemeriksaan IFN- $\gamma$  dan IL-10 serum dengan ELISA. Berdasarkan hasil analisis statistik, tidak terdapat perbedaan bermakna kadar IFN- $\gamma$  baik antara kelompok *early-onset preeclampsia* dengan kelompok *late-onset preeclampsia*, maupun antara kelompok preeklampsia dengan kelompok kontrol (harga p = 0,073). Sedangkan, menurut statistik didapatkan perbedaan bermakna kadar IL-10 antara kelompok *early-onset preeclampsia* dengan kelompok *late-onset preeclampsia*, begitu pula antara kelompok preeklampsia dengan kelompok kontrol (harga p <0,0001). Kesimpulan, tidak ada perbedaan bermakna kadar IFN- $\gamma$  pada serum maternal baik antara kelompok *early-onset preeclampsia* dengan *late-onset preeclampsia*, maupun antara kelompok preeklampsia dengan kelompok kontrol dan terdapat perbedaan bermakna kadar IL-10 pada serum maternal baik antara *early-onset preeclampsia* dibandingkan *late-onset preeclampsia*, maupun antara kelompok preeklampsia dibandingkan kelompok kontrol.

Kata kunci: *early-onset preeclampsia*, *late-onset preeclampsia*, IFN- $\gamma$ , IL-10

## ABSTRACT

This study was conducted to compare the IFN- $\gamma$  and IL-10 levels on maternal serum between early-onset preeclampsia and late-onset preeclampsia. We used cross-sectional design, and was held on dr. Mohammad Soewandhie hospital, Surabaya, East Java province, Indonesia, from June until August 2015. This research involved 13 pregnant women with early-onset of preeclampsia, 13 pregnant women with late-onset of preeclampsia, 13 pregnant woman with gestasional age <34 weeks, and 13 pregnant woman with gestasional age  $\geq$ 34 weeks, total 52 sample that recruited to this study. The IFN- $\gamma$  and IL-10 serum levels were estimated with ELISA. According to statistical analysis, we got no significant different of IFN- $\gamma$  levels neither between early-onset preeclampsia and late-onset preeclampsia group, nor between the preeclamptic group and control group (p-value= 0,073). Whereas, there is significant different of IL-10 levels between early-onset preeclampsia and late-onset preeclampsia group, so do between the preeclamptic group and control group (p value<0,0001). Conclusions, there is no significant different of IFN- $\gamma$  levels in maternal serum neither between early-onset preeclampsia and late-onset preeclampsia, nor between the preeclamptic group and control group. There is significant different of IL-10 levels in maternal serum neither between early-onset preeclampsia and late-onset of preeclampsia, nor between the preeclamptic group and control group.

Keyword: early-onset preeclampsia, late-onset preeclampsia, IFN- $\gamma$ , IL-10