Indeks proliferasi sel granulosa dan ekspresi gen CYP19A1 : hubungannya dengan polimorfisme gen reseptor FSH kodon 680 pada pasien sindroma ovarium polikistik = Granulosa cell proliferation index and CPY19A1 gene expression the relationship with FSH receptor gene polymorphism at codon 680 in patients with polycystic ovary syndrome

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Abstrak

[ABSTRAK

Pendahuluan: Sindroma ovarium polikistik (SOPK) merupakan masalah reproduksi yang sering terjadi pada perempuan usia reproduksi, namun hingga saat ini etiopatogenesis SOPK masih belum jelas. Penelitian ini bertujuan menganalisis peran sel granulosa folikel ovarium dalam etiologi SOPK, keterkaitan genotip FSHR Asn680Ser dengan patogenesis SOPK dan peran gen CYP19A1(aromatase) dalam patogenesis SOPK

Metode: Penelitian ini menggunakan desain penelitian analitik observasional berbentuk studi seran lintang (cross sectional study) dan dilakukan di Departemen Biologi FKUI, Klinik Yasmin-RSCM Kencana dan Laboratorium terpadu FKUI pada tahun 2011-2014. Sebanyak 142 subyek penelitian (66 pasien SOPK dan 76 pasien bukan SOPK) terlibat dalam penelitian ini. Sampel penelitian berupa darah tepi dan cairan folikel ovarium yang diaspirasi ketika proses ovum pick up sebagai sumber sel granulosa. Dilakukan isolasi DNA untuk analisis RFLP polimorfisme FSHR Asn680Ser, dilakukan kultur sel granulosa untuk mengetahui kemampuan proliferasi sel granulosa dan analisis ekspresi mRNA aromatase sel granulosa dengan metode RT-qPCR..

Hasil: Indeks proliferasi sel dan ekspresi mRNA aromatase sel granulosa pada kelompok SOPK lebih rendah secara bermakna dibandingkan bukan SOPK (p<0,05). Tidak ditemukan perbedaan bermakna distribusi genotip FSHR Asn680Ser antara kelompok SOPK dan bukan SOPK (p>0,05), tidak ditemukan perbedaan bermakna antara kadar hormon FSH basal berdasarkan variasi genotip FSHR Asn680Ser pada kelompok SOPK dan bukan SOPK (p>0,05). Tidak ditemukan perbedaan yang bermakna indeks proliferasi sel granulosa berdasarkan variasi genotip FSHR Asn680Ser baik pada kelompok SOPK maupun bukan SOPK (p>0,05). Tidak terdapat korelasi antara indeks proliferasi sel granulosa dengan ekspresi mRNA aromatase (p>0,05).

Kesimpulan: Indeks proliferasi sel dan tingkat ekspresi mRNA aromatase sel granulosa kelompok SOPK menurun dibandingkan kelompok bukan SOPK. Genotip FSHR Asn680Ser tidak menentukan kerentanan individu untuk menderita SOPK. Kadar hormon FSH basal dan indeks proliferasi sel granulosa tidak berbeda antara kelompok SOPK dan bukan SOPK berdasarkan variasi genotip FSHR Asn680Ser. Tidak ada korelasi antara indeks proliferasi sel dengan ekspresi mRNA aromatase sel granulosa pada penelitian ini.;Abstract

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ABSTRACT

Introduction: Polycystic ovary syndrome (PCOS) is a common reproductive problem in women at reproductive age, but until now aetiopathogenesis of PCOS has not been fully understood. The objective of this study was to analyse interrelationship between proliferation of ovarian follicular granulosa cells,

CYP19A1 expression and polymorphism at codon 680 of FSHR towards the etiology of PCOS

Methods: Observational analytic in the form of cross-sectional study was used in this research. The study was carried out between 2011-2014 at the Department of Biology, Integrated laboratory of Faculty of Medicine University of Indonesia and Yasmin clinic at the Cipto Mangunkusumo Hospital. A total of 142 subjects (66 patients with PCOS and 76 patients without PCOS) were involved in this study. Granulosa cells for culture were obtained from ovarian follicular fluid and total RNA was isolated from the cells. DNA samples were extracted from peripheral blood. Granulosa cell proliferation index was determined by counting under a phase-contrast microscope. CYP19A1 expression was measured by qRT-PCR, whereas polymorphism at Asn680Ser FSHR was performed by RFLP.

Result: Cell proliferation index and CYP19A1 mRNA expression levels in the granulosa cells of the PCOS group was significantly lower than non-PCOS ($p < 0.05$). There was no significant difference found in Asn680Ser FSHR genotype distribution between PCOS and non-PCOS group ($p > 0.05$). Based on Asn680Ser FSHR genotype variation, no significant difference was found between basal FSH hormone levels in the PCOS and non- PCOS group ($p > 0.05$) and FSHR genotype variation did not correlate with granulosa cell proliferation index between PCOS and non-PCOS group ($p > 0.05$). Moreover, there was no correlation between the granulosa cell proliferation index with aromatase mRNA expression levels ($p > 0.05$).

Conclusion: Cell proliferation index and CYPA1 expression of granulosa cells in PCOS group were lower compared to the non PCOS group although no correlation was found between the two parameters. Asn680Ser FSHR genotype did not correlate with individual susceptibility to PCOS. FSHR genotype variation did not correlate with basal FSH levels and granulosa cell proliferation index between PCOS and non-PCOS.;Abstract

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