

## Korelasi ekspresi GDF-9 dengan kualitas oosit dan laju fertilisasi pada pasien fertilisasi in vitro = The correlation between the expression of GDF9 gene with the oocyte quality and the rate of fertilization of IVF patients

Kinandra Rafa Khalisha Rambey, author

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### Abstrak

Latar Belakang: Growth Differentiation Factor 9 (GDF9) adalah salah satu anggota dari superfamili TGF- yang merupakan salah satu oocyte-secreted factor (OSF). GDF9 memainkan peran penting dalam folikulogenesis ovarium, kompetensi perkembangan oosit, serta sebagai molekul esensial yang mengontrol berbagai proses sel granulosa dan laju ovulasi. GDF9 merupakan OSF yang memainkan peran penting dalam menjaga fertilitas wanita. Penelitian ini bertujuan untuk mengetahui apakah ekspresi GDF9 berkorelasi dengan kualitas oosit dan laju fertilisasi pada pasien fertilisasi in vitro.

Tujuan: Mengetahui korelasi ekspresi GDF-9 dengan kualitas oosit dan laju fertilisasi pada pasien Fertilisasi In Vitro

Metode: Penelitian ini adalah penelitian potong lintang yang dilaksanakan di Klinik Yasmin, Rumah Sakit dr. Cipto Mangunkusumo, Jakarta sejak bulan Juli 2019 sampai bulan Juli 2020. Terdapat 26 wanita berusia 25-40 tahun pasien Fertilisasi In Vitro tanpa penyakit endometriosis maupun Sindrom Ovarium Polistikistik yang menjadi subjek penelitian ini. Cairan folikel pasien diambil, kemudian dilakukan pengukuran ekspresi gen GDF9. Setelah itu, dilakukan evaluasi pada data ekspresi gen GDF9 serta diuji korelasinya dengan kualitas oosit dan laju fertilisasi pasien menggunakan aplikasi SPSS.

Hasil: Sebanyak 26 pasien IVF berpartisipasi dalam penelitian ini. Median jumlah ekspresi gen GDF9 adalah sebanyak  $2.47 \times 10^{-5}$  ng/l dengan median kualitas oosit dan laju fertilisasi pasien IVF sebesar 3.00 dan 0.60. Berdasarkan hasil uji korelasi, terdapat korelasi negatif antara ekspresi GDF9 terhadap laju fertilisasi dengan kekuatan korelasi sedang ( $r = -0.443$ ,  $p = 0.012$ ). Sementara, ditemukan korelasi tidak bermakna antara ekspresi GDF9 terhadap kualitas oosit ( $r = -0.306$ ,  $p = 0.064$ ).

Kesimpulan: Terdapat korelasi negatif dengan kekuatan korelasi sedang antara ekspresi GDF9 dengan laju fertilisasi, sementara hubungan ekspresi GDF-9 dengan kualitas oosit memiliki korelasi tidak bermakna.

.....Background: Growth Differentiation Factor 9 (GDF9) is a member of the TGF- superfamily which is one of the oocyte-secreted factor (OSF). GDF9 plays an important role in ovarian folliculogenesis, the competence of oocyte development, as well as an essential molecule that controls various granulosa cells process and the rate of ovulation. GDF9 is an OSF which plays an important role in maintaining female fertility. This study is conducted to see the correlation between the expression of GDF9 gene with the oocyte quality and the fertilization rate in the IVF patients.

Aim: To find out the correlation between the expression of GDF9 with the oocyte quality and the rate of fertilization of IVF Patients

Methods: This study is a cross-sectional study which was conducted at Klinik Yasmin dr. Cipto Mangunkusumo General Hospital, Jakarta since July 2019 to July 2020. 26 IVF patients aged 25-40 years without the conditions of endometriosis or Polycystic Ovary Syndrome (PCOS) participated in this study. Follicular fluids are taken from the patients and the GDF9 gene expression were measured. The data were

then evaluated for its correlation with the oocyte quality and the fertilization rate using the SPSS application. Results: About 26 IVF patients were participated in this study. The median amount of GDF9 gene expression was  $2.47 \times 10^{-5}$  ng/l. The median of the oocyte quality and the fertilization rate was 3.00 and 0.60. According to the correlation test, there is a negative correlation between the expression of GDF9 gene and the fertilization rate with a moderate statistical correlation ( $r = -0.443$ ,  $p = 0.012$ ). Meanwhile, the expression of GDF9 gene has no significance correlation with the oocyte quality ( $r = -0.306$ ,  $p = 0.064$ ). Conclusion: This study showed a negative correlation between the expression of GDF9 gene and the fertilization rate, while the relation between the GDF9 expression and the oocyte quality has no significance correlation.