Hubungan Antara Konsentrasi SHBG (Sex Hormone Binding Globulin) dengan Testosteron, Insulin dan BMI (Body Mass Index) pada Pria Kaukasia di Jakarta = Relationship between concentration of SHBG (Sex Hormone Binding Globulin) and Testosterone, Insulin and BMI (Body Mass Index) at Caucasian Men in Jakarta

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Abstrak

Ruang Lingkup dan Cara Penelitian :
Dalam rangka pengembangan kontrasepsi hormonal pria, penggunaan TE (Testosteron Enantat) dan DMPA (Depot Medroksi Progesteron Asetat), menunjukkan hasil tingkat azoospermia yang lebih tinggi (90-100%) pada bangsa Asia, sedangkan bangsa Kaukasia hanya mencapai 70% atau kurang. Diduga ada 2 faktor yang mempengaruhi perbedaan tersebut yaitu faktor genetik dan faktor lingkungan termasuk makanan/diet. Telah diketahui bahwa diet negara Barat (Western Diet) mengandung lemak dan protein tinggi, sedang diet negara Asia (Asian Diet) mengandung karbohidrat tinggi. Dari penelitian dilaporkan bahwa status nutrisi tampaknya merupakan salah satu faktor yang mengatur konsentrasi SHBG (Sex Hormone Binding Globulin) yang dapat mempengaruhi jumlah testosteron bebas yang akan digunakan dalam mekanisme umpan balik negatif. SHBG adalah glikoprotein yang berfungsi sebagai alat pengangkut hormon steroid, mempunyai afinitas yang kuat terhadap dehidrotestosteron dan testosteron, sedangkan terhadap estradiol afinitasnya lebih lemah. Berbagai hasil penelitian di luar negeri menunjukkan bahwa korelasi antara konsentrasi SHBG dengan testosteron, insulin dan BMI hasilnya belum seragam dan satu sama lain berbeda-beda. Oleh karena itu kami merasa perlu mengadakan penelitian ulang pada orang Kaukasia yang berada di Jakarta. Pengukuran konsentrasi SHBG, menggunakan immunoradiometric assay (IRMA), sedangkan testosteron total, testosteron bebas dan insulin menggunakan radiommunoassay (RIA). Pengukuran glukosa, trigliserida dan albumin dengan menggunakan spektrofotometer. Untuk mengetahui komposisi makronutrien karbohidrat, lemak dan protein dilakukan pencatatan makanan (food record) selama 3 hari. Analisis korelasi dilakukan untuk mengetahui korelasi antara konsentrasi SHBG dengan parameter-parameter yang diukur dan analisis regresi ganda untuk mengetahui hubungan yang paling erat antara konsentrasi SHBG dengan parameter-parameter yang diukur.

Hasil dan Kesimpulan :
Hasil penelitian menunjukkan bahwa SHBG mempunyai korelasi positif dengan testosteron total (r = 0,483, P = 0,002), dan SHBG mempunyai korelasi negatif dengan testosteron bebas (r = 0,087, P = 0,312), insulin (r = 180, P = 0,134) dan BMI (r = 0,366, P = 0,017). Konsentrasi SHBG mempunyai hubungan paling erat dengan konsentrasi testosteron total (P = 0,001).
<hr><i>Scope and Research Method:
In developing men hormonal contraception, the utilization of TE (Testosterone Enantat) and DMPA (Depot Medroksi Progesterone Acetate), indicated higher level of azoospermia (90-100%) at Asian Men, while Caucasian men reached 70% or less only. Presumably, there were two factors affecting this discrepancy, genetic and environmental factor including meal/diet. It has been well known that Western Diet consists of

high fat and protein while Asian Diet consists of high carbohydrate. From the research, it was reported that nutrition status seemed to be one of many factors bringing about the concentration of SHBG (Sex Hormone Binding Globulin) affecting the number of free testosterone that would be used in the negative feedback mechanism. SHBG is glycoprotein acting as steroid hormone transporter, having strong affinity against dehydrotesterone and testosterone, in the same time its affinity against estradiol is weak. Many researches in foreign countries demonstrated that the correlation between concentration of SHBG and testosterone, insulin and BMI did not result in the uniform output and it was different one another. Therefore, we needed to repeat the research at Caucasian men in Jakarta. The measurement of SHBG concentration was using immunoradiometric assay (IRMA), while the measurement for total testosterone, free testosterone and insulin was using radioimmunoassay (RIA). The measurement of glucose, triglyceride and albumin was performed using spectrophotometer. To see the composition of macronutrient carbohydrate, fat and protein food record was conducted for 3 days. Correlation analysis was carried out to see the correlation between the concentration of SHBG and other parameters measured and multiple regression analysis was held to see the closest relation between SHBG concentration and other measured parameters.

Result and conclusion:
The research results indicated that SHBG had positive correlation with total testosterone (r= 0.483, P = 0.002), and SHBG had negative correlation with free testosterone (r=0.087, P = 0.312), insulin (r= 0.180, P = 0.134), and BMI (r= 0.366, P = 0.017). SHBG concentration had the closest relation with total testosterone concentration (p=0.001).</i>