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Polycystic ovarian disease has been associated, in women, with the occurrence of oligomenorrhea (Govan and Black, 1975). This paper compares and contrasts ovarian morphology with hormone profiles in peripheral plasma, before and after, laparoscopy and ovarian biopsy, and during clomiphene therapy. Twenty seven women with a history of primary oligomenorrhea were studied. The morphology of their ovaries was assessed from biopsies obtained at laparoscopy. Serial daily peripheral plasma samples were obtained for thirty days pre-biopsy, thirty days post-biopsy and during any clomiphene treated cycles. Using sensitive, precise, specific radioimmunoassays LH, FSH, progesterone, oestradiol 17β, oestrone, androstenedione, testosterone and prolactin were determined in the blood samples. The results showed that all women with primary oligomenorrhea had polycystic ovaries which showed excessive thecal luteinisation. This was probably a result of over stimulation by the elevated levels of LH which were found in all patients. 67% of the patients were anovulatory whilst the remainder showed evidence of recent ovulation. 22% of the anovulatory women ovulated following ovarian biopsy and all but one of the remainder ovulated following clomiphene treatment. The hormone profiles will be used to demonstrate the aetiology of polycystic ovarian disease and to discuss the occurrence of any associated hirsutism.

Reference

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43. The role of hyperprolactinaemia in infertile women with normal menstrual rhythm, J. R. T. COUTTS*, A. CRAIG†, R. FLEMING*, F. RUTHERFORD†, W. P. BLACK†, W. CARSWELL† and M. C. MACNAUGHTON†, *Department of Gynaecology Research, Glasgow Royal Infirmary, 106 Castle Street, Glasgow, Scotland, and †Searle Diagnostics Limited, Lane End Road, High Wycombe, Bucks, England

A number of women who present at infertility clinics have normal menstrual rhythm and show no evidence of ovarian dysfunction. In previous studies (Dodson, Macnaughton and Coutts, 1975) such patients were shown to produce endocrinologically deficient corpora lutea which appeared to be predetermined by ovulation of poorly grown follicles. In the present study daily plasma samples were obtained throughout two menstrual cycles in each of twelve infertile patients with normal menstrual rhythm. The first cycle served as a control whilst in the second cycle, depending on the basal level of prolactin, these women were treated with either HMG (Pergonal—G. D. Searle and Company—3 ampoules on each of days 1, 3 and 5) or Parlodel (Sandoz Limited—1 tablet each day). Using sensitive precise specific radioimmunoassays FSH, LH, prolactin, oestradiol 17β and progesterone were determined on each of the blood samples. The control sample results confirmed the previous findings with respect to the presence of poor corpora lutea following ovulation of immature follicles. Several patients showed evidence during their control cycles of transient hyperprolactinaemia. The effects of prolactin antagonists will be described and a possible role for prolactin in the normal ovary will be discussed.

Reference

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44. Production of adrenal androgens in normal postmenopausal women, J. POORTMAN, R. ANDRIESSE, A. AGEMA, G. DONKER, G. MULDER and J. H. H. H. THIJSSEN, University Hospital, Department of Endocrinology, Catharijnesingel 101, Utrecht, The Netherlands

The metabolic clearance rate (MCR) of dehydroepiandrosterone (DHEA), dehydroepiandrosterone-sulphate (DHEA-S) and 5-androstene-3β,17β-diol (Adiol), the interconversion rate and the conversion of the unconjugated compounds to their mono-sulphate conjugates has been studied in normal healthy postmenopausal women.

Eight subjects received a continuous infusion with [4-^{14}C]-DHEA and 7α-[^{3}H]-Adiol up to three h. Four subjects received a continuous infusion with [4-^{14}C]-DHEA-S and 7α-[^{3}H]-DHEA for 12 h. The specific radioactivity levels of the precursor hormones and the products formed, were measured by the reversed isotope dilution method. The plasma-levels of endogenous DHEA and Adiol were determined by specific radioimmunoassays.

The mean MCR for DHEA was 2017 L/day (1195 L/day/m^2) and for Adiol 754 L/day (449 L/day/m^2). The MCR of DHEA suggests both splanchnic and extrasplanchnic metabolism. The lower MCR of Adiol is due to its rather strong binding to SHBG. The mean plasma-level of DHEA in these normal postmenopausal women was 2.16 ng/ml, the level of Adiol was 0.69 ng/ml. The calculated production rate of DHEA was 4.2 mg/day (range 0.9–8.0) and of Adiol 0.5 mg/day (range 0.18–0.75). From the fractional conversion rate of DHEA to Adiol (=4%), it could be calculated that about one-third of the production of Adiol is derived from peripheral metabolism of DHEA. The MCR of DHEA-S, measured in the 12-h-experiments, was 23/L/day (13.6 L/day/m^2). This extreme low MCR-value is consistent with the strong binding of the sulpho-conjugates to human serum albumin. The conversion rate of Adiol to DHEA ($\rho^{\text{Adiol}\rightarrow\text{DHEA}}$) averaged 14%, the $\rho^{\text{DHEA-S}\rightarrow\text{Adiol}}$ 1% and the $\rho^{\text{DHEA-S}\rightarrow\text{DHEA}}$ 15%. With the assumption of a MCR of Adiol-mono-sulphate identical to that of DHEA-S, the conversion rates from the 12-h-infusion were calculated as $\rho^{\text{DHEA}\rightarrow\text{DHEA-S}}$ 6%, $\rho^{\text{DHEA}\rightarrow\text{Adiol-S}}$ 5.6%, $\rho^{\text{Adiol}\rightarrow\text{Adiol-S}}$ 6.0%, $\rho^{\text{Adiol}\rightarrow\text{DHEA-S}}$ 40% and $\rho^{\text{DHEA-S}\rightarrow\text{Adiol-S}}$ 9.7%.

45. Simultaneous radioimmunoassay of serum testosterone and 5α-dihydrotestosterone without a chromatography step, C. DOTTI, A. BECCHI, C. CASTAGNETTI, B. COLLA and G. FILIPPI, Radioisotopes Section, 1st Radiology Dept., Arcispedale S. Maria Nuova, Reggio Emilia, Italy

Characterizing the specificity of an antiserum to be used in Radioimmunology (RIA) in accordance with the conventional method of evaluation of cross-reactivity (i.e. competition between tracer and cross-reactant for the antiserum sites), the real conditions in which the interference develops are not respected because, in the unknown, the specific antigen is almost always present and it selects and occupies the more specific antibody sites, therefore conditioning the binding behaviour of the antiserum. The conventional method, therefore, does not give data for the final effect of the cross-reactant on the antigen assay. Consequently, such data cannot be used for correcting, when needed, the cross-reactant-induced overestimation of the found antigen values. On this basis, the behaviour of the antisera towards their cross-reactants has been studied by us, reproducing the real environment existing in the unknown in which tracer, specific antigen and cross-reactant compete simultaneously for the antibody sites.

Testosterone (T) and 5α-dihydrotestosterone (D) antisera were characterized in agreement with the above stated criteria by setting up an antigen-recovery test carried out in the presence of T in the case of D-RIA and also of D in the case of T-RIA. Both cross-reactants were added