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of cardio-metabolic diseases. The aim of this study was to search for any difference of the oxidative stress parameters between in patients with hypogonadism and healthy controls.
Materials and Methods
Thirty eight male patients with congenital hypogonadotrophic hypogonadism (CHH) (mean age 21.7 ± 1.6 years) and 44 body mass index (BMI) matched healthy male subjects (mean age 22.3 ± 1.4 years) were enrolled. The demographic parameters, homeostatic model assessment of insulin resistance (HOMA-IR) and oxidative stress parameters such as superoxide dismutase (SOD), catalase, glutathione peroxidase (GPx) and malondialdehyde (MDA) were measured in patients and healthy controls.
Results
When compared to the healthy controls, triglycerides ($p = 0.02$), insulin, HOMA-IR, catalase and MDA levels ($P = < 0.001$ for all) were significantly higher, and the HDL cholesterol ($P = 0.04$), total testosterone, FSH, LH and GPx levels ($P = < 0.001$ for all) were significantly lower in patients with CHH. There were significant correlations between the total testosterone levels and catalase ($r = -0.33$ $P = 0.01$), GPx ($r = 0.36$ $P = 0.007$) and MDA ($r = -0.47$ $P < 0.001$) levels.
Conclusions
The results of this study show that young and treatment naïve patients with hypogonadism have increased oxidative stress related parameters such as serum catalase and MDA levels. There is significant correlation between oxidative stress parameters and testosterone levels. Prospective, randomized, controlled studies with larger number of cases are needed to prove the relationship between oxidative stress and increased cardio-metabolic risk in hypogonadism.

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EP717

Delay in the onset of male puberty: role of mutations in luteinizing hormone-beta gene

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The reawakening of hypothalamo-pituitary-gonadal axis at puberty is influenced by a number of hormonal and genetic factors along with certain environmental cues. In boys, puberty is initiated at around 9 years of age as plasma concentrations of luteinizing hormone (LH), follicle stimulating hormone (FSH) and testosterone (T) begin to rise leading to development of secondary sex characteristics. The absence of signs of sexual maturation at the age of 14/15 years is regarded as delayed puberty. One of the main causes of delay in puberty is hypogonadotropic hypogonadism (HH), characterized by low LH, FSH and T secretion, resulting in absent or impaired sexual development. This study examined the endocrine and genetic basis of pubertal delay in boys. Blood samples were obtained from 30 boys of delayed pubertal development and 30 age matched controls. The plasma concentration of growth hormone (GH), LH, FSH and T were determined using ELISA. Based on low plasma concentrations of GH, LH, FSH and T, genetic analysis was performed for determining possible mutations in TACR3 and LH-β genes. TACR3 is expressed in the hypothalamus, whereas LH-β is synthesized by pituitary gonadotropes. One mutation, H148L, of TACR3 and two mutations, G56D and G122S, of LH-β were screened. DNA was extracted from blood samples of both groups by organic method, primers of exons of TACR3 and LH-β splice sites were designed and PCR-RFLP method was employed for analysis. The mutations H148L of TACR3 and G56D of LH-β were not found in any group, whereas the PCR product of LH-β digested by enzyme Eco01091 gave bands of 3 different genotypes in HH boys, GG (93.33%), GA (3.33%) and AA (3.33%). Thus, one heterozygous G122S mutation in one and one homozygous G122S mutation in another patient were identified. In conclusion, homozygous G122S mutation may cause pubertal delay in our local population.

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EP718

Is Testosterone (T) treatment safe and effective in men with HIV infection? A meta-analysis

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Background
Prevalence of hypogonadism is high (30%) in men with HIV. In these patients T treatment (TT) is currently used mainly to counteract wasting syndrome and/or HIV-related lipodystrophy, irrespective of patients' serum T. However, its effect and safety in HIV-infected men is still not completely known.
Aim
To investigate both beneficial and adverse effects related to TT in HIV-infected men using a meta-analytic approach.
Methods
An extensive MEDLINE search was performed using 'PubMed' with the following key-words: 'HIV' and: 'hypogonadism', 'TT', 'T', 'androgens' or 'sex steroids' from 1946 to April 2015. Meta-analysis included 19 placebo-controlled-clinical trials evaluating TT in HIV patients and was conducted according to PRISMA statement using RevMan.
Results
All 19 trials evaluated the effect of TT on body weight on a total of 952 subjects (TT group: 557; placebo group: 395). Patients' gonadal status was often not reported and most of patients were presumably eugonadal. All data are shown as standardized mean and Confidence Interval (CI). TT significantly improved total lean body mass (1.44 [0.82–2.07], $P < 0.001$), total body weight (0.99 [0.25–1.72], $P = 0.008$) and fat free mass (1.48 [0.85–2.12], $P < 0.001$). This improvement is characterized by higher heterogeneity ($I^2 = 84\%$, 88%, and 60%, respectively). Conversely, no beneficial effects were seen on total fat mass (−0.17 [−1.58–1.25], $P = 0.820$). TT was associated with an increased incidence of minor adverse events (OR = 1.50[1.11–2.01], $P = 0.008$) and increased mean serum PSA (0.10 ng/mL, [0.03–0.17], $P = 0.007$). No change in hemoglobin (0.39 g/dL, [−0.29–1.07], $P = 0.260$) was seen.
Conclusions
Our study suggests that TT in HIV-infected men is effective in improving body composition (increase in lean body mass), although the incidence of general adverse events is higher than in the placebo group. However, studies show a highest variability and the real benefits of TT in HIV-infected men remains still to be established.

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EP719

Aluminium oxide nanoparticles-induced spermatotoxicity, oxidative stress and changes in reproductive hormones and testes histopathology in male rats: Possible protective effect of glutathione

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There is a rising use of Aluminium oxide nanoparticles (Al_2O_3NPs) in many branches of industry and personal care products. Because of these uses, their impact on the environment must be considered and investigated. Almost nothing is known about the effects of Al_2O_3NPs on semen quality and reproductive hormones. Possible mechanisms for the cytotoxicity of Al_2O_3NPs are still being discussed, but oxidative stress may be responsible for their effect. Therefore, the objective of this study was thus to know the capability of glutathione as antioxidant agent against the effects of Al_2O_3NPs on sperm parameters, testosterone, FSH, LH, steroid enzymes, histological changes, lipid peroxidation and antioxidant enzymes in male rats. Animals were divided into four groups, group 1 was used as control, group 2 was treated orally with glutathione (100 mg/kg BW), group 3 was treated intraperitoneally (IP) with aluminum oxide nanoparticles (70 mg/kg BW; <50 nm), group 4 was treated with aluminum oxide nanoparticles plus glutathione. Rats were administered their respective doses every day for 77 day. Results showed that Al_2O_3NPs decreased final body weight, body weight gain, relative testes and epididymis weights, sperm count,

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