The 2014 International Klotz Symposium is devoted to human testicular physiology and its dysfunctions during the developmental stages. We are privileged to welcome well-known leading experts who are internationally recognized in the field. Their participation promises interesting discussions on male reproductive function.

The program will cover the genesis, differentiation and development of the fetal gonads, their neonatal activation and the mysterious and deceptively quiescent prepubertal phase. Since the identification of the testis differentiating factor SRY by Peter Goodfellow and his team in London, we thought it important to focus on the cascade of molecular processes that turns on fetal testis activity. In XY males, steroidogenesis is one functional aspect that, in the testis, is predominantly orientated to the production of testosterone, the key hormone for male phenotype development of internal and external genital organs. Classical and alternative pathways of steroidogenesis that maintain the sex steroid environment before birth will also be discussed. We next review the active stimulation of chorionic then pituitary gonadotropins for full testis development of endocrine function. Surprisingly, these successive phases of placental and neuro-endocrinological control of fetal testicular development have been poorly explored, despite being crucial for normal testis descent. Endocrine control of testicular migration within the scrotum, with the respective influences of testosterone and INSL3, will be presented and their implications for the comprehension of cryptorchidism will be discussed. On this particular item, potential environmental impact, mainly involving exposure to endocrine disruptors, as a possible origin of cryptorchidism and disorders of sex development (DSD) will be discussed.

We will next go through post-natal testicular development, with steroid and peptide involvement, before the start of spermatogenesis. Steroid hormones and peptides that are involved in testicular function before spermatogenesis can be measured and the testis visualized with appropriate imaging, promising improved understanding of their synergy.

In this dense physiological context, the pathology of sexual development and abnormal spermatogenesis, with their consequences for male sexuality and reproduction, will be discussed together with the choice of optimal treatment, including assisted reproductive technology and its recent developments. Interestingly, abnormal testicular differentiation and male reproductive diseases have been useful models for identifying new molecular and cellular concepts, with endocrine and paracrine patterns that accurately regulate sexual functions. Human male contraception, challenging the concept of spermatogenesis inhibition with the conservation of normal sexual processes, will be updated. Innovative and original animal models have opened new avenues, with the perspective of spermatogenesis inhibition using a non-hormonal approach based on critical epigenetic regulation.

Finally, as aging inexorably affects testicular function, the reality of this process and the appropriate treatments will be discussed, to restrain the unfounded use of so-called “magic androgenic youth pills”, with uncertain benefits but well-identified side-effects. Lessons from a rational multicenter study of ageing males recently performed in Europe by diligent and outstanding clinical research investigators will provide some evidence-based perspectives on male ageing. This will bring the meeting to a thoroughly satisfactory conclusion.

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