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Part (V)

(1) HIV and Pregnancy

Prof. Ossama Hussein
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Abstract

In June 1983, the Centers for Disease Control and Prevention (CDC) reported the first cases of women acquiring AIDS through heterosexual sex. Neonatal HIV infections are a result of transmission from a mother to her unborn fetus in utero, or during the intrapartum period, or postpartum secondary to breastfeeding. The specific health needs of pregnant women, living with HIV have been overlooked throughout three decades of the HIV epidemic. In the US, perinatal transmission has been reduced to less than 1 % in many states, reflecting implementation of key interventions during pregnancy, including initiating cART to suppress viral load beneath the level of detection and avoidance of breastfeeding during the postpartum period. Here, we present a concise review outlining the latest perinatal recommendations, as well as potential future practices for medical providers caring for HIV-infected pregnant women. Additionally, we tried to clarify the possible effects of HIV infection on pregnancy and pregnancy outcomes as well as the reverse effects, if any, of pregnancy on HIV infection.

(2) The Effect of HIV Infection on Fertility

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Abstract

Aim: To review evidences for the effect of HIV on fertility and the reproductive options for HIV discordant couples, where the male partner is infected.

A total of 61 studies addressing HIV effect on fertility and means of risk reduction were reviewed in a comparative way to their methodology and results.

Globally, of the 36.7 million people living with HIV "PLHIV"; 80% are of reproductive age. 20% of new infections in 2015 were adolescent girls and young women 15 to 24 years old. ARV has produced improvement in life expectancy and quality of life for PLHIY. Significant increase in PLHIV fertility desires, and intensions to have children were observed, ranging from 28% in Africa up to 69% in Ontario.

HIV infection Significantly lowers fertility by 20-40%. Significant decline occurs as early as 2-5 years after HIV infection, with increased risk of infertility. This is due to the HIV virus itself, the use of ARV and the change in sexual behaviour. In men, HIV lowers testosterone level, decreases semen volume, sperm motility and count, besides decreasing the sexual desire.

In women, it causes anovulatory cycle, amenorrhea, ovarian failure, low level of follicle stimulating hormone, infecundity, and higher rate of pregnancy loss. ARV (mainly NRTI and PI) damages the mitochondria in sperm and ova, and decreases sperm count and motility. Assisted reproductive technology using intrauterine insemination, in-vitro fertilization or in tracytoplasmic sperm injection "ICS!'; combined with sperm washing achieved fertilization rates between 50.1-77%, pregnancy rates between 40-63.1 %
In all reviewed studies, there were no cases of sero-conversion among the female partners or the newborns, neither at birth nor at 3 or 6 months follow up evaluation.
Cumulative evidences suggested that a negative link exists between HIV infection and fertility. Assisted reproductive technology is safe & effective for avoiding horizontal & vertical transmission in HIV sero-discordant couples.

(3) Antioxidants and Male Infertility, An Update

Prof. Ahmad Mahmoud
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Abstract

The role of oxidative stress in sperm damage and low fertilizing capacity is well-documented. Recent studies on therapy with antioxidants will be reviewed. The concept that one size fits all in treatment with antioxidants will be challenged. Recent studies suggest a possible role for antioxidants in the management of azoospermia and TESE/ICSI.

(3) Low Intensity Extra-corporeal Shockwave Treatment as a Novel Therapy for Erectile Dysfunction

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Abstract

Low-intensity shockwave therapy (USWT) has been implemented for the treatment of ED and to optimize the response to PDE5i. A shockwave is a wave of abrupt pressure (vibration movement) produced by an object that travels faster than the speed of sound «10 ns) producing external pressure differences and increased temperature. It was discovered that therapeutic ultrasound encourages angiogenesis by enhancing the expression of vascular endothelial growth factor.

The mechanism of action is still not completely elucidated. However, low-intensity energy has been shown to induce the production of a physiologically significant amount of non-enzymatic nitric oxide and activate intracellular cascade pathways that trigger the release of angiogenic

factors. The first observation studies in patients who responded poorly to PDE5i therapy reported on the efficacy and safety of LISWT devices, especially in patients with ED of vascular origin and in those with a poor response to PDE5i treatment.

(4) Histopathologic and Ultrastructural Changes in Seminiferous Tubules of Adult Male Albino Rats following Daily Administration of Different Doses of Tadalafil

Associate Prof. Amira A. Eid
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Abstract

Selective phosphodiesterase type 5 inhibitors, such as sildenafil, tadalafil, or vardenafil, are currently the mainstay of treatment of erectile dysfunction. The unresponsiveness of some patients to on-demand therapy prompted the need for daily dosing of tadalafil, Studies addressing the impact of daily tadalafil on fertility are scanty and yielded contradictory results. Objective: To investigate the effect of chronic daily administration of different doses of tadalafil on the structure of the seminiferous tubules and on spermatogenesis.
Sixty adult male Wistar rats were divided into four groups: a control group (group I) and groups IJ, Ill, and *N* that received daily tadalafil in doses equivalent to human doses of 5, 10, and 20 mg daily respectively for 12 weeks. The epididymis was processed for evaluation of sperm parameters, serum testosterone was measured, Johnsen score for rats was calculated, and testicular histopathological and ultrastructural examinations were performed.
A significant decline in serum testosterone, the studied semen parameters and Johnsen score was detected with higher daily doses of tadalafil. In addition, histopathological and ultrastructural degenerative changes in rat testes were detected; these changes were dose dependent and increased with increasing the dose of tadalafil. However, the influence of these changes on the actual fertility of these animals remains to be determined.

(5) Assessment of Antisperm Antibodies in a Sample of Egyptian Patients with Hepatitis C Virus Infection

Associate Prof. Dalia El-Neily
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Abstract

Association of hepatitis C virus (HCV) with auto immune phenomena impaired semen parameters has been previously reported. The aim of this study was to investigate the influence of HCV infection on the development of antisperm antibodies (ASAs) in HCV- positive males. The study was conducted on 30 HCV-infected individuals and 30 healthy control subjects. In

both patients and control groups, liver enzymes and reproductive hormones were measured; computer-assisted semen analysis (CASA) was performed; HCV-RNA in serum was measured and IgG and IgA ASAs in semen were determined.
Free testosterone, sperm concentration, progressive and total motility were significantly lower in HCV patients than in the control group, whereas ASAs of the IgG and IgA Classes were significantly higher in HCV patients.
However, correlations between viral load and the examined semen parameters and ASAs were non-significant.
In conclusion, HCV may be responsible for the increased ASAs detected in HCV patients in the present study, possibly providing another plausible explanation for the decreased sperm motility reported in HCV patients. These findings could be of value in fertility management of HCV patients.

(6) Aneuploidy Frequency in Spermatozoa of Egyptian Men with Normal and Abnormal Semen Parameters using FISH

Associate Prof. Rasha Geneidy
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Abstract

Chromosome anomalies were suggested to be more frequent in infertile males so our case control study aimed at evaluating the incidence of spermatic aneuploidies in forty males with severe oligoasthenoteratozoospermia (OAT) and comparing it with that in another forty males having normal semen parameters.
Semen samples were collected and analysed in the Clinical Pathology Department according to criteria of the World Health Organization (WHO) laboratory manual for the examination and processing of human semen, 2010, (WHO Press). Fluorescence in situ hybridisation (FISH) was performed on decondensed spermatozoa from fresh semen ejaculates, using dual coloured chromosome-specific DNA probes labelled with fluorochromes to study sperm aneuploidies in chromosomes 13, 21, X and Y.
There was no statistical Significant difference between cases and controls regarding disomy frequencies for chromosomes 13, 21 or both combined. However, 13, 21 diploidy frequency was significantly higher among OAT cases. Regarding chromosomes X and Y, both cases and controls showed similar results for disomy/diploidy frequency for both chromosomes; however, there was a statistical significant increase in YY disomy/diploidy frequency among OAT patients.
X chromosome-bearing spermatozoa were found to be Significantly higher among controls. Patients with severe OAT have a higher total sperm aneuploidy rate, regarding chromosomes 13, 21, X and Y but without a statistical Significant difference.

(7) Cell-free Seminal mRNA and Azoospermia

Associate Prof. Rania Abdel Maksoud
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Abstract

The present study aimed to investigate the potential application of DDX4 gene expression in cell free seminal mRNA as a non-invasive biomarker for the identification of the presence of germ cells in men with non-obstructive azoospermia and to correlate this factor with testicular biopsy.
Male reproductive organs-specific genes were chosen; DDX4 which is a germ cell-specific gene, and transglutaminase 4, which is a prostate specific gene that was used as a control gene. Thirty-nine azoospermic males and twenty-eight normospermic fertile males (serving as a control group) participated in the study. Histopathological examination of testicular biopsies categorized azoospermic males into 20.5% with maturation arrest, 17.9 % with incomplete Sertoli Cell Only Syndrome and 61.5 % with complete Sertoli Cell Only Syndrome. Using real time- Polymerase chain reaction, positivity for DDX4 gene was detected in 17 out of 39 males with NOA which was due to maturation arrest in 35.3% (n=6/17) of cases, incomplete Sertoli cell only in 23.5% (n=4117) and due to complete Sertoli cell only in 41.2% (n =7/17).
The study recommends joint utilization of molecular transcripts as non-invasive biomarkers and histopathological examination of testicular biopsies in management of cases with azoospermia of the non-obstructive type.

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