



4th World Congress on **Virology**

October 06-08, 2014 Hilton San Antonio Airport, TX, USA

Intracellular detection of infectious pathogens in sperm cells

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Viral presence in sperm is a cause of infertility. Viral factors as a cause of male subfertility have not greatly concerned the medical community up until now. On the contrary, a correlation between high numbers of Natural Killer lymphocytes (NK) in the blood of women with a history of subfertility and/or miscarriages, and the presence of subclinical herpes viremia (HSV1-2, EBV, CMV, HHV6 and HHV7) has been described. Observation of miscarriage material revealed that NK mostly infiltrated at the implantation site, while the blood NK levels in a portion of these women were normal. This can be explained if the embryos in these cases were by themselves antigenic due to the presence of viral (at least herpes-viral) antigens, originating from the male through the sperm cells, including spermatozoa. These antigens would be expressed and presented to the woman's immune system by fetal cells causing the NK response. A method of intracellular detection of pathogens (viruses and Chlamydia trachomatis) has been developed. The sperm cells are fixed, permeabilized and DNA digestion is accomplished with DNase I. Incubation with antibody against each pathogen is followed by incubation with a fluorescent conjugated secondary antibody. The samples are acquired in a flow cytometry apparatus and analyzed with suitable software. Results so far, show that a significant percentage of samples taken from infertile men were found to be infected by intracellular chlamydia and/ or viruses. Especially in men infected with Chlamydia trachomatis, microbial load fell or the infection disappeared following antibiotic treatment. Furthermore, they also improve their Teratozoospermia Index (TZI) and the mean value of abnormalities per spermatozoon.

Biography

A. Gritzapis was granted a PhD at the age of 27 from the Department of Biological Chemistry in the Medical School of the University of Ioannina, Greece and was employed until 2012 as principal investigator at the Cancer Immunology Immunotherapy Center of the Department of Immunology at Saint Savas Cancer Hospital, Athens Greece. He is currently employed as principal investigator in the department of Immunology and Cellular Biology at Locus Medicus S.A., Athens, Greece. He has published more than 50 papers in reputed journals.

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