Proteomics-2013
OMICS Group Conferences
Accelerating Scientific Discovery
3rd International Conference on
Proteomics & Bioinformatics
July 15-17, 2013 Courtyard by Marriott Philadelphia Downtown, USA

Is sperm proteomic approach helpful to delineate human infertility?!

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Abstract

We have been studied immune reactivity between sperm antigens and antisperm antibodies developed in infertile males, infertile females and prepubertal boys with testicular failure dissecting human biological material of serum, seminal plasma, cervical mucus and peritoneal fluid samples. Pre-selection of antisperm antibodies reactivities was approached mainly using recommended by WHO – IBT (immunobead) test, however other tests of antibody detection (sperm agglutination, flow cytometry, ELISA, Western immunoblotting) were also applied. By using Western immunoblotting we have found extensive cross-reactivity between sperm entities and somatic cells epitopes (lymphocytes, erythrocytes) as well as variety of infectious microorganisms, possibly due to common carbohydrate epitopes. This phenomenon focused our attention on accurate biological delineation of sperm antigens due to immune reactions by using 2-D gels and mass spectrometry characterizing sperm entities among surface sperm antigenic extracts and total cell lysates in order to follow revealed autoimmune reactions. Altogether we have identified 35 different sperm antigenic entities in accessible databases out of which 10 appeared to be sperm specific. Seventeen sperm entities were detected by sera samples from immune infertile males while 18 by antisperm antibody positive seminal plasma. Additionally, 6 amino acid sequences indicated novel (hypothetical) sperm proteins. Peculiar reactions were found while female circulating (serum) antisperm antibodies were applied. In most of cases non-specific reactions were revealed pointing out earlier literature dedicated to low avidity and specificity of humoral reactions raised in females toward sperm antigens. The potential utility of sperm proteomic approach to delineate background of infertility causes or possible application at immunocontraceptive approaches shall be discussed.

Biography

Maciej Kurpisz, male, geneticist and clinical physician graduated from Poznan Medical University (Poland) in 1980. Dr Kurpisz (MD, PhD) has been nominated a full professor (since 1996) and Head of the Department of Reproductive Biology and Stem Cells, Polish Academy of Sciences, Poznan, Poland. He was trained in Department of Immunology, London UK, Oregon Research Primate Center and Jones Institute in Reproductive Medicine, USA. He was also a Visiting Professor in Deutsches RheumaforschungsZentrum, Berlin and Hyogo Medical College, Japan. He has published almost 300 papers including 10 books and/or monographies. His interests cover: immunology, genetics, infertility, anti-aging, stem cell biology.