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## Reproductive Endocrinology

### MALE REPRODUCTIVE HEALTH

#### *Evaluation of Free Light Chains of Immunoglobulins in Seminal Plasma of Infertile Patients: Preliminary Data*

Carmine Bruno, MD<sup>1</sup>, Edoardo Vergani, MD<sup>1</sup>, Alessandro Oliva, <sup>-1</sup>, Cecilia Napodano, PhD<sup>1</sup>, Krizia Pocino, PhD<sup>1</sup>, Francesca Gulli, PhD<sup>2</sup>, Annunziata Stefanile, PhD<sup>1</sup>, Umberto Basile, PhD<sup>1</sup>, Antonio Mancini, MD<sup>1</sup>.

<sup>1</sup>Università Cattolica del Sacro Cuore, Rome, Italy, <sup>2</sup>Ospedale S. G. Vannini, Rome, Italy.

Seminal plasma is a complex fluid with various components (proteins, enzymes, macro- and microelements, lipids and nutrients) and its role is fundamental for spermatozoa motility, viability and fertilizing capacity maintenance. Many molecules have been measured in seminal plasma to explore some secretion functions of male accessory glands, but effects of biochemical components in human seminal plasma are still debated. Immunoglobulin-free light chains (FLCs)  $\kappa$  and  $\lambda$  are produced by plasma cells in slight excess for the need of immune response and are therefore assayable in blood and in other biological fluids, such as urine, saliva, liquor and synovial fluid. Recently, different biological functions have been attributed to these molecules, suggesting that they are not just a secondary product of immunoglobulin synthesis. No data are reported about presence of FLCs in seminal plasma and their role in physiology of male reproductive system and/or in pathophysiology of infertility. The aims of our study were to investigate the presence and detectability of FLCs in seminal plasma and to evaluate the usefulness of this assay in the diagnostic approach to infertility patients. We enrolled 32 patients aged 19-40 ys, affected by primary infertility; among them, 7 were normospermic (mean $\pm$ SEM concentration 100.0 $\pm$ 16.0 \*10<sup>6</sup>/ml; progressive motile forms 39.1 $\pm$ 4.9%; normal forms 45.3 $\pm$ 4.5%), 25 were oligo- and/or asthenoteratospermic (mean $\pm$ SEM concentration 23.8 $\pm$ 5.4\*10<sup>6</sup>/ml; progressive motile forms 19.3 $\pm$ 4.1%; normal forms 36.05 $\pm$ 2.7%); moreover, 17 patients presented II-IV degree varicocele (VAR) according to Dubin-Amelar classification by Doppler technique, the remaining 15 patients did not present varicocele (NO-VAR). After abstinence for 3-5 days, semen samples were collected. FLCs concentrations were assayed by turbidimetric method. Standard semen analysis was performed according to WHO laboratory manual for the examination and processing of human semen, fifth edition, 2010. As main results, independently from sperm count, a significantly difference was observed concerning FLCs concentrations, with higher levels of  $\kappa$  and  $\kappa/\lambda$  ratio in NO-VAR vs VAR patients (mean $\pm$ SEM  $\kappa$  36.4 $\pm$ 13.2 vs 17.7 $\pm$ 9.0 g/l and 7.7 $\pm$ 2.9 vs 2.65 $\pm$ 0.7, respectively;  $p$ <0.05).  $\lambda$  FLCs did not significantly differ between the two groups. This work shows for the first time that FLCs are assayable in seminal plasma, even if their source is to be determined (plasma filtration or local synthesis from lymphoid tissue in accessory gland). Our preliminary data also showed a peculiar pattern with prevalence of  $\kappa$  FLCs in infertile patients without VAR, suggesting that FLCs could be in interesting field of investigation in idiopathic infertility. Further studies in large and stratified patients may reveal a possible usefulness of FLCs as a biological marker and/

or gain insight about their etiopathogenetic role in male infertility.

## Reproductive Endocrinology

### MALE REPRODUCTIVE HEALTH

#### *Factors Impacting Quality of Life in Patients With Klinefelter Syndrome: A Systematic Review with Narrative Synthesis and Meta-Analysis.*

Brien Mehmet, Bsc, PgDip, RN<sup>1</sup>, Sofia V. Llahana, RN<sup>2</sup>.

<sup>1</sup>City, University of London, London, United Kingdom,

<sup>2</sup>University College of London Hosps, London, United Kingdom.

**Objective:** To identify how Klinefelter's Syndrome affects patients' quality of life (QoL) and to determine which subsections of QoL are affected guided by the WHOQOL100-tool as an overarching framework for QoL. To determine the effects and impact KS has on patients' QoL when compared to the QoL of healthy controls and general population. DESIGN - Systematic review of studies reporting QoL factors among patients with KS which included narrative synthesis and thematic analysis of 17 studies and a meta-analysis of intelligence quotient (IQ) completed in 7 studies. QoL factors were reviewed based on the parameters of the WHOQOL-100: physical health, psychological, level of independence, social relations, environment, and religion/spirituality/personal beliefs. DATA SOURCES - Medline, Cochrane, Embase, Psychinfo, CINAHL, BASE and grey search from the reference lists of key publications. **Eligibility Criteria:** RCT's, Cohort studies, cross sectional studies and Epidemiology studies involving patients with KS and reporting on QoL parameters. Only human studies published in English were considered with no limits for publication date. **Results:** Out of all studies included (n=1266), (87.5%) had suggested KS negatively affected the outcomes measures tested, where recorded (91.1%) of studies had small/medium/large effect sizes (Cohen's d). Narrative synthesis suggests all subgroups of QoL excluding 'environment' and 'spirituality/faith/personal beliefs' were negatively impacted for patients with KS, whilst meta-analysis showed statistical significance ( $P$  <0.00001) which identified patients with KS having lower full-scale IQ compared to healthy controls. Psychological parameters were the most affected in this patient group, showing that patients with KS experienced greater social anxiety, distress during social interactions, self-esteem, self-injuries behaviours and symptoms or traits related to Autism spectrum. **Conclusions:** This review identifies the significant evidence supporting that QoL is reduced in patients with KS. There is a large spectrum of symptoms and no standard phenotype for KS suggesting that multiple facets of QoL are negatively impacted in these patients due to the complex nature of KS and the severity of symptoms and phenotype associated with KS. PROSPERO REGISTRATION NUMBER - CRD4202017343

## Reproductive Endocrinology

### MALE REPRODUCTIVE HEALTH

#### *Impact of Short-Acting vs Long-Acting Testosterone Therapy on Intratesticular Testosterone Using Data*