EVALUATION OF SEMINAL PLASMA PROTEOMIC PROFILE IN PATIENTS WITH SECONDARY INFERTILITY

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INTRODUCTION

- Male factor is estimated to contribute to approximately 50% of all infertility cases.
- Basic semen analysis is the first step in the assessment of the male fertility potential. However, men with normal semen parameters can be infertile.
- The seminal plasma protein profile is a reflection of spermatozoa homeostasis.
- Alterations in the seminal plasma proteome can have adverse effects on the fertilization potential of spermatozoa.

The aim of this study was to analyze the seminal plasma proteomic profile of patients with secondary infertility against proven fertile donors.

EXPERIMENTAL DESIGN

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RESULTS

Proteomic analysis identified a total of 523 proteins

Functional categories of Differentially Expressed Proteins (DEPs)

- Semenogelins help form a gel matrix surrounding ejaculated spermatozoa.
- ANXA2 is critical for blood-testis barrier integrity and timely release of spermatids.
- C3 is involved in membrane fusion during fertilization and C4 is essential to the classical complement pathway.
- HSPA8 enhances sperm membrane fluidity and increases sperm-oviduct binding ability.
- APP is involved in cell adhesion, cell motility, cell signaling, and apoptosis.

Processes affected in the top protein interaction networks of DEPs

- Cellular movement, cell to cell signaling and interactions (21 focus molecules)
- Metabolic disease, carbohydrate metabolism, inflammatory response (11 focus molecules)
- Cellular movement, immune cell trafficking (7 focus molecules)

Processes enriched with many DEPs

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<tr>
<th>Networks</th>
<th>Presence</th>
<th>p-Value</th>
<th>FDR</th>
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<td>Inflammation Complement system</td>
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<tr>
<td>Immune response Phagocytosis</td>
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</tbody>
</table>

CONCLUSION

- We have demonstrated that men with secondary infertility have altered cellular pathways.
- Differences in seminal plasma proteome between proven fertile men and males with secondary infertility suggest that these proteins play an important role in fertility impairment.
- Seminal plasma proteins are a promising source for identification of secondary infertility-related biomarkers.