Stem cell based therapies for non-obstructive azoospermia (NOA): key treatment characteristics according to infertile couples

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Introduction

ALREADY KNOWN
- TESE-ICSI is to date the only treatment option for genetic offspring in couples with NOA
- Two stem cell based treatments for NOA are in preclinical stage of development
  - Differentiating induced pluripotent stem cells (iPSCs) into sperm to be used for ICSI
  - Autotransplanting in vitro proliferated spermatogonial stem cells (SSCs) for natural conception
- Previous qualitative research found that men with NOA value effectiveness, safety, burden, ‘resemblance to natural conception’ and ‘curability’

STUDY QUESTION
What is the relative importance of treatment characteristics of TESE-ICSI and two future stem-cell based treatments to couples diagnosed with NOA and which treatment do they prefer?

Material and Methods

DESIGN
- Cross-sectional observational survey conducted in 2012-2013
- Questionnaire based on literature and a previous qualitative study

PARTICIPANTS
- All 921 couples confronted with NOA and treated with TESE-ICSI in two Dutch fertility clinics between January 2007 and July 2012
- Recruitment via coded questionnaires sent by mail

ANALYSIS
- Questionnaires’ validity and reliability was assessed
- Treatment characteristics were ranked by importance
- Linear regression, analysis of variance and chi-square tests examined demographic and medical determinants of attached value and preference

Results

RESPONDENTS
- 494 couples responded (response rate 54%)
- The responding couples were on average 34 (women) and 37 (men) years old
- Treatment outcomes were:
  - unsuccessful TESE (54%)
  - successful TESE with ICSI ongoing (11%)
  - successful TESE but unsuccessful ICSI (12%)
  - achieved pregnancy after TESE-ICSI (23%)

RELATIVE IMPORTANCE OF THE TREATMENT CHARACTERISTICS
- The three most important treatment characteristics (Table I):
  - Safety for children
  - Effectiveness
  - Curability
- Males’ education level and duration of infertility were positively correlated with mean importance ratings; past consideration to quit treatment was negatively associated. Current treatment success determined importance ratings.

PEFERRED TREATMENT OPTION IN CASE OF EQUAL EFFECTIVENESS AND SAFETY
- 67% prefers autotransplantation of SSCs (for natural conception) over TESE-ICSI
- 34% prefers differentiating iPSCs (for ICSI) over TESE-ICSI
- 75% would accept differentiating iPSCs (for ICSI) as a last resort option
  - Reasons for not wanting last resort treatment with differentiating iPSCs: not wanting an iPSC treatment, preferring other options (e.g. adoption), emotional well-being, feeling too old to parent

Conclusion

- The interest of patients into stem-cell based treatment encourages further preclinical research
- Treatment characteristics valued by patients should guide research on stem-cell based therapies and may guide implementation decision-making
- This study shows the relevance of involving patients while developing new treatments

LIMITATIONS
- Patients’ hypothetical choices might change when safety and effectiveness data of the investigated new treatments become available

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