Study design, size, duration: This is a retrospective study based on 6117 oocytes from 256 IVF and 383 ICSI treatments performed at the Reproductive Medicine Centre, Skåne University Hospital, Malmö, Sweden.
Participants/materials, setting, methods: The DFI values were categorized into 3 intervals: DFI ≤ 10% (reference group), 10% < DFI ≤ 20%, and DFI > 20%. Endpoints were meantime of formation of pronuclei (tPNa), meantime of fading of pronuclei (tPNf), meantime of early cleavage (t2) and meantime of starting blastulation (tSB). Data were analyzed using univariate analysis of variance in three ways; the interaction between DFI category and fertilization type, separately for IVF and for ICSI and also ICSI compared to standard IVF.
Main results and the role of chance: In the ICSI group the meantime of tPNa was significantly lower for 10% < DFI ≤ 20% and DFI > 20, as compared to the reference group (DFI ≤ 10%). The meantime of tPNf increased statistically significant in the standard IVF group for 10% < DFI ≤ 20% and DFI > 20 as compared to the reference group. When comparing ICSI to IVF, the mean t2 time was statistically significantly higher for the latter if DFI was above 20%. The meantime of starting blastulation was significantly longer in the ICSI group for DFI ≤ 20 as compared to the reference group, but no such association was observed within the IVF/ICSI Group.
Limitations, reasons for caution: A larger prospective randomized multistudy would be required to confirm the findings of this study.
Wider implications of the findings: Our present findings together with previous observations suggest indirectly that sperm DNA integrity takes important role not only in fertilization moment but also in early embryo development.
Trial registration number: N/A.

O-192 Influence of sperm parameters on embryonic development, morphokinetics, and ART outcomes: male factor exploration in a female factor-controlled study platform

A. Leza[1], E. Rocafort[1], I. Vilella[2], L. Medrano[1], M. Guijarro[1], B. Ramos[1], M. Enciso[2], J. Sarasa[2], M. Fernández[1], J. Aizpurua[1]
[1]*IVF Spain, Reproductive Medicine, Alicante, Spain*
[2]*iGLS, Genetics Department, Alicante, Spain*

Study question: Do sperm parameters influence embryonic development, morphokinetics, and ART outcomes in egg donation cycles?
Summary answer: High sperm apoptosis levels negatively influence good quality competent blastocyst production and ART outcomes in egg donation cycles.
What is known already: Infertility is a complex multifactorial phenotype where several elements, including male and female factors, could be involved. Accordingly, it is difficult to design controlled studies to anticipate which factors have a predominant effect on ART-outcomes. In order to investigate male factor impact on reproduction, an egg-donation program appears like the ultimate study platform. The number of studies of this kind is limited; to our knowledge none of them has focused on the effects of male parameters on embryo morphokinetics. The present study aims to shed some light into the influence of sperm quality on pre-implantation development morphokinetics and clinical outcomes.
Study design, size, duration: This unicentric and retrospective study included 282 sperm samples from patients undergoing egg-donation cycles and morphokinetic embryo selection using time-lapse imaging (Eeva™ test) at our centre between January 2014 and September 2015. The influence of sperm parameters in embryo development and ART outcomes is explored in a female factor-controlled study platform.
Participants/materials, setting, methods: Prior to fertilization, sperm concentration and motility based on WHO criteria (2010) and apoptosis levels using flow cytometry Annexin V-FITC/PI assay were determined in all samples.

All embryos were cultured until day 5 and monitored by time-lapse imaging (Eeva™) providing a prediction of embryo competency on day 3 (High/Medium/Low). Selected fresh single embryos were transferred to recipients in a hormonal substituted cycle. Reproductive outcomes were statistically compared between patients with normal and altered sperm values.
Main results and the role of chance: A significant impact on the production of good quality blastocysts with high implantation potential as predicted by Eeva test was observed in samples with altered levels of live apoptotic sperm cells (>30%). Samples with abnormal apoptotic levels showed a frequency of competent blastocysts significantly lower compared to samples with normal apoptosis values (26.54 ± 8.44 vs. 49.40 ± 2.57, $p = 0.028$). No impact of this parameter was observed on fertilization. Altered concentration or motility values were not correlated with either fertilization or embryo development rates.

In terms of clinical outcomes, the presence of apoptosis showed a dramatic negative effect on pregnancy rates. Biochemical pregnancy was significantly lower on samples with high levels of apoptosis (30.8 vs. 67.1%, $p = 0.009$). Similar results were found when clinical pregnancy rates (30.8 vs. 60.1%, $p = 0.04$) and ongoing pregnancy rates were compared (18.2 vs. 51.5%, $p = 0.036$). No such differences were detected when normal and altered sperm concentration or motility values were compared.

These results show that sperm apoptosis affects early stages of embryo development even when egg quality is good, and therefore can compromise the number of competent blastocysts obtained in egg-donation cycles. Moreover, sperm apoptosis levels negatively impact post-transfer embryo development even in cases were good quality embryos are transferred.
Limitations, reasons for caution: The retrospective and unicentric design of this study may be a reason of caution. The number of sperm samples with abnormal apoptosis levels was limited, this should be increased to confirm the results obtained. Further randomized studies are needed to validate our results.
Wider implications of the findings: Increased sperm apoptosis negatively influences blastocyst production and ART-outcomes in egg donation cycles. Reduction of apoptotic cell levels in the ejaculate by either medication or the use of MACS-selection technique may be a valuable strategy to improve embryo development and clinical outcomes in cases with high apoptotic sperm cell levels.
Trial registration number: A trial registration number was not required due to the retrospective study design.

SELECTED ORAL COMMUNICATIONS

SESSION 52: WHEN SPERM ARE THE LIMIT

Tuesday 05 July 2016 **Hall 5 CB** **17:00–18:00**

O-193 Limits for number of offspring in Danish anonymous sperm donors: what are the risks?

C.T. Ekstrøm[1], O. Schou[2], A.B. Pinborg[3]
[1]*University of Copenhagen, Biostatistics – Department of Public Health, Copenhagen, Denmark*
[2]*Cryos International, Denmark, Aarhus, Denmark*
[3]*Copenhagen University Hospital, Department of Obstetrics and Gynaecology, Hvidovre, Denmark*

Study question: How does the limit in the number of offspring from anonymous Danish sperm donors influence the risk and uncertainties of inbreeding?
Summary answer: We provide an improved statistical model that yields a recurrence time of 75 years for inbreeding with the current available Danish data.
What is known already: In 2013 the Danish limits for the number of offspring that a Danish sperm donor can father was lowered from 25 to 12. The choice for the new limit was not evidence-based, but was based on the feeling that the old limit was considered too high. The limit is set in place to reduce the risk of inbreeding and to minimize the risk that a sperm donor has an undiagnosed heritable disease that is segregated to a large number of offspring, but no-one has any good estimates of the actual risk in the Danish population.
Study design, size, duration: We used an improved version of the Hajnal–Curie–Cohen model to compute and evaluate the limits based on detailed information about the Danish population distribution drawn from Statistics Denmark.
Participants/materials, setting, methods: The Hajnal–Curie–Cohen (HCC) model is widely used to evaluate the average number of potential unwittingly consanguineous half-sibling matings among the offspring of an anonymous artificial insemination sperm donor. We extend the HCC model to accommodate detailed information about the donors and population, and improve it to make it possible to make statistical inference and evaluate different legal limits and requirements, and population restrictions.
Main results and the role of chance: We present the HCC model and our extensions and emphasize the three major improvements: (1) We can model the offspring of individual donors and not just the expected number of consanguineous