



OVO
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COMPARISON OF A NEW CONTINUOUS SINGLE STEP MEDIA WITH AN ESTABLISHED SINGLE STEP MEDIA

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Canadian Fertility and Andrology Society

61st ANNUAL MEETING
1st – 4th October, 2015
Halifax, Canada

ABSTRACT

Introduction

There has been a recent trend towards single step media and more lately towards a demand for continuous single step media especially related to the increased interest in time lapse technology. Life Global was the first modern single step media, on the market for over 10 years. The use of a single step media without changing media during culture requires a balanced composition that will not accumulate toxins and provides sufficient nutrients. This prospective study intended to validate a new continuous single step media (Sage 1-Step) to assess blastocyst rate when compared with an established single step media (Global Total).

Methods

Between April and September 2014 a prospective sibling study was performed on 56 cycles of IVF-ICSI using autologous eggs with ejaculated sperm. Oocytes were assigned to either Sage One-Step or Life Global with the first egg assigned to each media alternatively. Embryos were cultured without media changes until day 6. Sibling eggs (239 Global, 254 Sage) were compared for cleavage rate and blastocyst rate and quality without media change during culture from day 0 (ICSI) or day 1 (Standard IVF). Embryos were assessed daily and selection for transfer and cryopreservation made based on our usual protocols.

Results

There were no significant differences between Global and Sage 1-Step in terms of cleavage rate (94% vs. 97%), Top quality embryos (TQE) (54% vs. 55%) and blastocyst rate day 5 (49% vs. 57%). The proportion of TQB was the same in each group (54% vs. 63%).

Single blastocyst transfer was carried out and there were no differences in the characteristics between the groups. (age, eggs collected, fertilisation rate). The clinical PR was 63% vs. 45%.

Conclusions

Based on clinic policy, any patient with less than 4 TQE on day 3 had a day 3 ET; this reduced the number of cycles reaching blastocyst ET. There were 27 blastocyst transfers and 12 cycles with freeze-all blastocysts. Further study with a greater number of blastocyst eSET is recommended. The increased interest of time lapse both as a tool for

embryo selection and the ability to leave embryos undisturbed during culture necessitates media which can support embryo development without media changes. This study demonstrated that Sage 1-Step can be used in this type of culture with comparable results to an established media product. Additional benefits in terms of blastocyst rate and quality may be seen if the culture would be carried out undisturbed.

The study was supported by SAGE ORIGIO Denmark. The authors have no conflict of interest.

OBJECTIVE

The aim of the study was to assess a new to market single step media to an established market leading media without changing media or supplementing media drops to day 5 of culture.

METHODS

A prospective sibling egg study was performed on 56 cycles of IVF-ICSI using autologous eggs and ejaculated sperm. A total of 493 oocytes were assigned alternatively to the two media. The first oocyte was assigned to one of the two media alternatively also to reduce bias. Cases where at least ten oocyte cumulus complexes were retrieved were eligible to participate in the study. Exclusion criteria included need for PESA/TESE/MicroTESE, egg donation, contraindication for blastocyst culture and participation in another ovo r&d study.

For standard fertilization, Global Total Fertilization was used in both groups to achieve fertilization and then test oocytes were transferred into SAGE 1-Step after fertilization check on day 1. For ICSI cases, test oocytes were transferred into SAGE 1-Step following the microinjection and then no further media changes were made and culture was carried out until day 6 if necessary.

Embryo transfer was carried out on day 3 or day 5 according to standard clinic protocol. Blastocysts that developed on day 6 were eligible for vitrification but no fresh transfers took place as per standard protocol. Comparison of cleavage and blastocyst rate was made between the two groups.

STATISTICS

The aim of the study was to assess a new to market single step media to an established market leading media without changing media or supplementing media drops to day 5 of culture.

RESULTS

(n = 56; sibling)	%	Global® Total®	%	SAGE 1-Step™ with SPS	P
Cleavage rate (day 3) per zygote (%)	95	(226/239)	97	(246/254)	NS
Good quality embryos*1 per embryo (%)	57	(129/226)	57	(139/246)	NS
Embryos transferred or cryopreserved Day 3	14	(32/226)	13	(31/246)	NS
Embryos discarded Day 3	3.5	(8/226)	5.3	(13/246)	NS
Embryos cultured until Day 5	82	(186/226)	82	(202/246)	NS
Blastocyst rate (day 5) per embryo (%)	49	(92/186)	57	(115/202)	NS
Good quality blastocysts*2 per blastocyst (%)	54	(50/92)	63	(72/115)	NS
Blastocysts transferred or cryopreserved Day 5	58	(53/92)	60	(69/115)	NS

*1 Good quality embryos Day 3 (≥ 6-cells G2; Istanbul Consensus Workshop 2011; Human Reprod. 2011; 26(6): 1270-83)

*2 Good blasts (≥2BB; Istanbul Consensus Workshop 2011; Human Reprod. 2011; 26(6): 1270-83)

Due to transfer or cryopreservation of embryos on Day 3, cleavage embryo calculations are based on the number of zygotes and blastocyst rates are based on the number of embryos cultured until Day 5 (~ 82% of zygotes).

CONCLUSIONS

The ability to carry out continuous culture without the need to change or supplement the media over the course of several days allows for fewer manipulations and in the case of time lapse to leave embryos in an optimal environment during the entire culture period. In this prospective sibling study of IVF/ICSI cycles using autologous oocytes and ejaculated sperm, we found that there was no significant difference in the performance of the SAGE 1-Step continuous media when compared to an established product in the market, Global Total.

The cleavage rate, proportion of TQE, blastocyst rate and proportion of TQB was not significantly different between the two media types.

A trend towards increased blastocyst rate and proportion of good quality blastocysts in the SAGE 1-Step group would need to be confirmed with greater numbers.

REFERENCE

1. Reed ML, Hamic A, Thompson DJ, Caperton CL (2009) Continuous uninterrupted single medium culture without medium renewal versus sequential media culture: a sibling embryo study. Fertil Steril 92, 1783-6.



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