Background: Survival of any species depends on the production of healthy offspring, with losses during pregnancy countering this requirement. Early pregnancy loss (EPL) occurs in 5-8% of confirmed equine pregnancies, with no diagnosis made in over 80% of these cases. Whilst aneuploidy is implicated in a significant proportion of human spontaneous abortions, investigations into aneuploidy rates of other species remain limited. The objective of this study was to identify aneuploidies in equine EPL conceptuses.

Methods: EPL conceptus material and clinical histories were submitted from cases of pregnancy loss (14-65 days of gestation) between 2013 and 2018. Age-matched control conceptuses were obtained from manually terminated clinically normal pregnancies (CNP). Equal loads of isolated DNA from allantochorion and foetal tissues were hybridised to Axiom™ Equine Genotyping Array (Affymetrix, USA). DNA from healthy term chorioallantois and adult blood were also present on the array. Whole genome copy number was visualised using Integrative Genomics Viewer (IGV).

Results: Aneuploidy of at least one chromosome was detected in 12/55 EPLs (21.8%), compared with 0/10 CNP, 0/5 healthy term, and 0/5 healthy adult mares. Aneuploidies involved 10/32 chromosomes, representing both trisomies (n=9/12) and monosomies (n=3/12). Only 2 of the autosomal aneuploidy types have been previously reported in live-born equines (trisomy 30, and trisomy 23) with the remaining aneuploidy types being unique to this study. Maternal age did not significantly differ between aneuploidy and non-aneuploid EPL conceptuses (range 3-19, and 4-21 years, respectively).

Conclusions: We present the first evidence of aneuploidies in conceptuses from failed equine pregnancies offering the first step in identifying definitive genetic causes for these early losses. Aneuploidy is thus not human-specific and may offer answers to pregnancy loss in other domestic species.

P129 IVF/ICSI splits: the best of both worlds?

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Objective: If there is uncertainty regarding optimal mode of insemination an IVF/ICSI split is sometimes offered. The aim of this study was to compare the outcomes of IVF and ICSI in split cycles. The primary outcome was to identify any differences in the fertilization rate and embryo development. The secondary outcome measure was clinical pregnancy rate.

Materials and methods: This was a retrospective study of the split IVF/ICSI cycles from January 2017 to December 2018. Data was collected from the embryology database and was analysed using GraphPad. 19 split IVF/ICSI cycles were identified. The oocytes were split into ICSI (n=99) and IVF (n=136). The median age of patients was 37 years. Semen parameters assessed according to WHO 2010 classification. The most common indication for the split was previous poor samples. One of the borderline samples on the day did not meet the criteria for IVF but prepared well.

Results: The fertilization rate was 155 out of 237 (65.4%). ICSI 66.7%, IVF 65.4% (p =0.09). There was no case of complete failed fertilization. There was no statistically significant difference in the number of good quality embryos on day 2, day 3 and day 5. Three patients had freeze all because of hyperstimulation. Six had day 3 transfers,10 had blastocyst transfers. Of the 16 embryo transfers nine had ICSI and six had IVF embryos transferred. One patient had a double embryo transfer of one IVF and one ICSI embryo. The clinical pregnancy rate in the fresh cycles was 10/19 (53%); 6/9 for ICSI and 4/6 for IVF (p=0.72). The cumulative pregnancy rate including thaw cycles is 13/19 (68%).

Conclusion: According to our small study there is no advantage in doing ICSI when there is no clear indication to do so and so IVF/ICSI splits do not need to be offered.

P130 Obstetric outcomes of pregnancies after fertility treatment

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Background: It is estimated that infertility affects 1 in 6 couples. Advances in assisted reproductive technologies offer a realistic opportunity to men and women with fecundity issues to have a child of their own. However, when fertility treatment is successful and pregnancy is achieved, the women very often face further challenges such as increased risks of antepartum and intrapartum complications associated with using assisted conception technologies. The aim of this study was to find what obstetric outcomes are in women who became pregnant as a result of fertility treatment.

Methods: A cohort study with a retrospective review of medical records of women giving birth at a hospital in Ukraine over three years and a similar hospital in the UK over one year. The study included cases where women achieved pregnancy via fertility treatment such as ovulation induction, assisted conception with IUI, IVF, and ICSI. Outcomes of interest were rates of multiple pregnancies, pre-eclampsia, gestational diabetes, preterm births, induction of labour, mode of delivery.

Results: Hypothyroidism was diagnosed in 6.7-14.2% of women, 8.2% had gestational diabetes, and 1.5-1.7% had severe pre-eclampsia. Overall 11.2% of women gave birth at <37 weeks of gestation. Preterm deliveries were 45.5% in twin pregnancies and 8.1% in singletons. Induction of labour was conducted in 21.6% of cases. Vaginal delivery was achieved in 6.6% of women from Ukraine and 53% from the UK. The caesarean section rate was 93.4% in Ukraine and 47% in the UK. Twin pregnancies accounted for 3.3-8.2% of all cases. The highest rate of caesarean section was in women with twin pregnancies (73%-100%).

Conclusion: Women who conceived with fertility treatment have higher rates of hypothyroidism, preterm deliveries, twin pregnancies, and caesarean sections. The finding of the study can assist clinicians in counseling women on expected obstetric outcomes of pregnancies after fertility treatment.

P131 Exploring the tool kit: application of Quality Improvement (QI) principles founded from manufacturing within the IVF laboratory using the Model for Improvement (MFI) and lean

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Background: QI principles conceived from the manufacturing industry were evaluated within an IVF clinic. MFI and lean can accelerate performance improvement within an organisation making it faster, better and more affordable. There are examples of successful application of these approaches within healthcare (1-3). Little has been published regarding application of MFI or lean within assisted conception. This study aimed to assess the usefulness of these QI principles within an IVF laboratory.

Methods: The MFI and lean were applied to identify areas for improvement within the laboratory processes. An area of focus was optimisation of culture conditions and changes for improvement were explored. Incubators were utilised differently. This was a prospective study. Many QI tools were used including Statistical-Process-Control charts (BaseLine© SAASoft). Measurements included incubator door openings and stability, practitioner steps, procedure timing, and standard clinical outcome data.

Results: Clinic staff engaged with the project which emphasised the importance of QI within the laboratory. Certain process measures indicated an improvement. The frequency of incubator door openings was reduced by 36%. The distance oocytes travelled within the laboratory was reduced by 22% and each culture dish was out approximately 15.5 seconds less during procedures. This resulted in a 9% reduction in the time that oocytes spent outside of optimum incubator culture conditions and removed approximately 9.5 steps taken by practitioners during procedures. The daily fluctuation of incubator O_2/CO_2 gas levels was significantly reduced. Other process measures showed no significant change (incubator temperature, fertilisation rates and embryo utilisation rates). Outcome measure of clinical pregnancy rate and implantation rate remained consistent.

Conclusions: This work resulted in improvement in the culture system workflow by refining processes, without impacting on clinical results. Team exploration of QI principles was a valuable learning experience encouraging a mindset of continuous QI and accelerated performance improvement within the IVF laboratory.

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