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Meta-analysis for clinicians: the pitfalls and benefits

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cycles and related the weight changes to the number of follicles and the occurrence of pregnancy.

Materials and methods: During 1995, data from 264 IVF cycles were collected. All cycles were stimulated using HMG after down-regulation with GnRH analogues. The luteal phase was supported by progesterone vaginal suppositories. Weight was determined with a digital balance at fixed points in the cycle. Weight measurements were standardized: they were performed before noon, in undressed patients after micturition. Emptiness of the bladder was confirmed by ultrasound. The number of dominant follicles was assessed by ultrasound on the day of HCG administration. Pregnancy was defined as a positive urine test 2 weeks after embryo transfer. The significance of weight changes was tested using Wilcoxon's test. Correlations between weight change and the number of follicles were expressed as Pearson's *r* value, including significance testing.

Results:

| Day of IVF cycle | Weight ^a |
|-------------------------|---------------------|
| Day 1 of HMG | 65.7 ± 0.8 |
| Day 7 of HMG | 65.7 ± 0.7 |
| Day of HCG | 66.1 ± 0.7 |
| Day of oocyte retrieval | 66.0 ± 0.8 |
| Mid-luteal phase | 66.3 ± 0.8 |
| Day of pregnancy test | 65.4 ± 1.3 |

^aMedian ± SE (kg).

| No. of follicles | Weight change ^a |
|------------------|----------------------------|
| 0-5 | 0.5 ± 0.2 |
| 5-10 | 0.3 ± 0.1 |
| 10-15 | 0.6 ± 0.1 |
| 15-20 | 0.6 ± 0.1 |
| 20-25 | 0.6 ± 0.3 |
| >25 | -0.6 ± 0.7 |

^aMedian ± SE (kg).

Weight changes in treatment cycles were not statistically significant. No patient had signs of ovarian hyperstimulation syndrome (OHSS). No significant correlation was found between weight change and the number of dominant follicles on the day of HCG administration. No correlation was found between weight change and the occurrence of pregnancy.

Conclusions: No significant changes in weight could be demonstrated in 264 IVF cycles without OHSS. Weight was related neither to the number of dominant follicles nor to the occurrence of pregnancy.

Meta-analysis

Wednesday, 3 July 1996
Auditorium 1

08:30-09:00

142. Meta-analysis for clinicians: the pitfalls and benefits

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Clinical medicine is currently in transition from experience-oriented to evidence-based. The evidence at issue is gathered

from applied medical research on the value of diagnostics and the effects of interventions. Evidence from available studies should preferably be summarized systematically and critically in a meta-analysis. This presentation will focus on the methods of conducting meta-analyses, with special emphasis on the sources of bias in the procedure (publication bias, poor quality of primary studies and the drawbacks of statistical pooling) and the potential solutions. For didactic purposes, examples will be taken from domains other than reproductive medicine. Finally, the application of an algorithm to summarize the level of the available evidence will be presented as an interface between meta-analysis and evidence-based treatment guidelines.

09:00-09:45

143. Meta-analysis in reproductive medicine

Lilford R.L.

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There has been an exponential rise in the number of randomized clinical trials in facility in recent years. However, the quality of these trials has been very poor. The most important quality criterion in any trial is the security of the randomization procedure itself. In 70% of cases, the trials are either not truly randomized or the author does not even mention this vital detail. Most trials are underpowered (much too small); as a rule of thumb, one should aim for 700 people per group. Alternatively, one has to rely on meta-analysis to combine results from separate studies. Most of the clinical trials, including most of the high quality trials, are in the area we call assisted conception. I will give examples of these, one of the most dramatic being 10 clinical trials which show that down-regulation of the pituitary, as a prelude to IVF, increases success and reduces costs. Assisted conception is an expensive technique which is not available in most parts of the world. Therefore we have developed the concept of ASSIST (Assessment of Simple Strategies in Sub Fertility Treatment). Meta-analyses of clinical trials of male subfertility show that we do not yet have many simple effective treatments. There is a possibility that immunosuppression works for men with antisperm antibodies, but most of the trials use a crossover design which can exaggerate the beneficial effects because of potential bias in the second arm of the study. The only published clinical trial on varicocele ligation shows no benefit, but I understand that an unpublished World Health Organization study is pending, with very interesting results! Meta-analysis work in the subfertility field can show very interesting features. For example, one can contrast the results of studies of different quality. Individuals who constantly obtain positive results in the face of generally negative findings stand out. I will give examples of this, because clearly the generalizability of the findings of such authors must be questioned. I shall discuss the evidence for other topics under ASSIST, including the