

## **Optimizing rFSH dose regimens for in vitro fertilization**

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### **Summary**

This PhD thesis includes 3 papers and a review. The project was carried out at the Fertility Clinic, Rigshospitalet during the period 2000-2003.

The aim of the project was to develop and assess a clinically useful rFSH dose score system that enables the clinician to optimize and individualize the rFSH doses for controlled ovarian hyperstimulation in patients treated with in vitro fertilization (IVF and ICSI).

A prospective study on 145 “standard” patients showed that by means of a multiple regression analysis only the total number of antral follicles, total Doppler score and smoking status predicted the number of aspirated oocytes in patients treated with 150 IU/day of rFSH per day. In order to implement the knowledge we have on the predictive factors into clinical practice we made a suggestion for an rFSH dosage normogram consisting of the total number of antral follicles on day 2-5, total Doppler score on day 2-5, total ovarian volume on day 2-5, age and smoking status.

A prospective randomized dual centre clinical trial including 267 first IVF/ICSI cycles of “standard” patients showed that individual dosage regimen increased the proportion of appropriate ovarian responses and decreased the need for dose adjustments during the course of COH. A higher ongoing pregnancy rate was observed in the individual dose group.

In a retrospective study on 567 patients with 952 treatment cycles who were treated with a standard dose of 150 IU/day in the 1<sup>st</sup> cycle more than half of the patients needed an altered starting dose in the 2<sup>nd</sup> cycle. The results showed that rFSH dose adjustments have a significant impact on ovarian response primarily in younger patients.

In conclusion, this PhD project scientifically and clinically substantiates the rationale for an rFSH dosage normogram. The normogram has been tested in a clinical setting and the results justify the use of the tailor made starting dose approach already from the first treatment cycle in a well- defined group of “standard” patients.

#### **List of papers**

1. Popovic-Todorovic B, Loft A, Lindhard A, Bangsbøll S, Andersson AM, Andersen AN. A prospective study of predictive factors of ovarian response in 'standard' IVF/ICSI patients treated with recombinant FSH. A suggestion for a recombinant FSH dosage normogram. *Hum Reprod.* 2003 Apr;18(4):781-7.
2. Popovic-Todorovic B, Loft A, Bredkjaer HE, Bangsboll S, Nielsen IK, Andersen AN. A prospective randomized clinical trial comparing an individual dose of recombinant FSH based on predictive factors versus a 'standard' dose of 150 IU/day in 'standard' patients undergoing IVF/ICSI treatment. *Hum Reprod* 2003; 18(11):2275-2282.
3. Popovic-Todorovic B., Loft A., Ziebe S, Nyboe Andersen A. Impact of recombinant FSH dose adjustments on ovarian response in the second treatment cycle with IVF or ICSI in ‘standard’ patients treated with 150 IU/day during the first cycle. *In Press Acta Obstetricia et Gynecologica Scandinavica*

