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Asymmetric follicular development : A possible predictive parameter in IUI success

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Summary:

This study aims at predicting the possible success of an IUI cycle by simply determining the 'Incongruity ratio' of ovarian response to clomiphene citrate induced controlled ovarian hyperstimulation (COH) in patients where IUI has been recommended, such that a clinician can readily evaluate and if need be abandon a futile cycle- thus increasing the overall effectiveness and cost benefit of the procedure.

Introduction

IUI is perhaps the most commonly practiced ART in all infertility centers. Yet, it suffers from a major set back- unpredictable success rates in apparently healthy cycles. Although, COH has markedly improved success rates in some, the frustration of repeated IUI failure is not entirely uncommon. In an attempt to coordinate IUI success rates with the only readily available parameter- good ovarian induction, we have stumbled upon an area of complete darkness ie. what exactly controls asymmetric follicular maturation in COH. The cause of the incongruent pattern of follicular distribution of growing follicles between the two ovaries, (a fact that does not necessarily recurr in subsequent treatment cycles) is still unclear. Yet, incongruity ratios have been shown to have a direct correlation with pregnancy rates in GIFT procedures (Rombauts et al 1996). Our purpose, in this study is to establish whether or not incongruent follicular development can predict IUI success rates.

Material and Methods

100 patients (22-40 yrs) who registered for IUI at the department of Infertility, N.G. Medicare & Calcutta Hope Infertility Clinic were included in this study. Despite the fact that the causes of infertility in the patients were different (idiopathic, poor PCT, PCO, endometriosis or azoospermia), they were uniformly subjected to COH with clomiphene citrate and hMG and their follicular diameters monitored regularly by vaginal ultrasonography. Follicular diameters were taken as the mean of two perpendicular axes, one being maximum in that plane. When at least two follicles reached a diameter > 17 mm. and the endometrial thickness (visualized as a triple line) was > 8 mm, hCG was given and IUI performed twice

within 30-36 hrs. of hCG administration. Clinical pregnancy tests were confirmed by urinary Beta hCG measurements (ELISA method).

To estimate the degree of discrepancy between the two ovaries, the 'incongruity ratio' on the day of hCG administration was calculated as the sum of all follicular diameters > 10 mm. in the dominant ovary divided by the sum of all follicular diameters > 10 mm. in the other ovary. Patients were grouped accordingly as their incongruity ratios were either more or less than 1.5.

Results

The overall success rate of IUI at our center, in this prospective study was 34%. Patient in whom follicular development was synchronous over both the ovaries ie. those with an incongruity ratio< 1.5 had a higher clinical pregnancy rate (62%) compared to the other group (38%) where there was a marked difference in follicular development between the two ovaries ie. where the incongruity ratio is > 1.5 (Fig. 1).

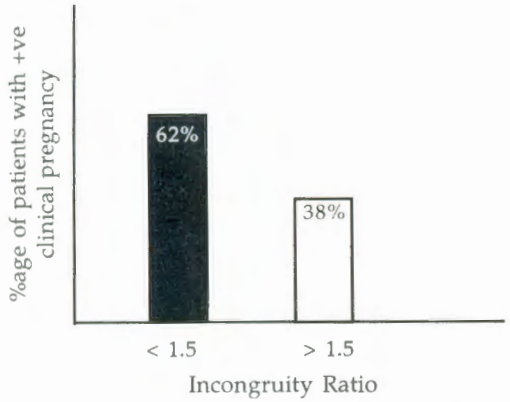

Fig 1: Clinical pregnancy rates in the two groups of patients with an incongruity ratio less or more than 1.5

Moreover, considering the patients who failed to conceive 73% had an incongruity ratio > 1.5 (Fig. 2), thus confirming our speculation that this parameter is useful in predicting the possible pregnancy outcome of a particular cycle.

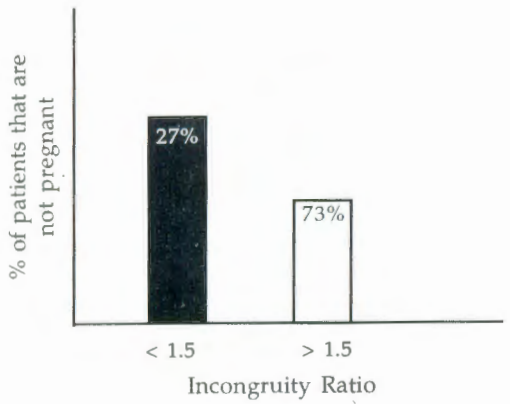

Fig 2: Percentage of nonpregnant patients with an incongruity ratio more or less than 1.5.

Discussion

Infertility is a major health care problem today, with acute physiological, psychological and sociological implication and more often than not dominates the lives of an infertile couple. Media announcement often brings hope to some couples but for most they potentiate distress. There is a need to prepare infertile couples with all the options open to them, the expense involved and the inevitability that failure is more likely than success. Among all the ART procedures, IUI is by far the most routinely employed technique. Yet success rates of this procedure are low and unpredictable. In an attempt to understand the reason behind this, we have tried to correlate the significance of incongruent follicular development during COH as having marked importance in predicting the success of an IUI cycle.

Whether such asymmetric distribution of growing follicles is a manifestation of poor follicular development during COH is as yet unclear. Yet our results indicate a direct correlation between incongruent follicular development and low IUI success cycles. In view of the fact that ART is becoming increasingly more expensive and the assurance of a healthy pregnancy limited in a country where the socioeconomic status of the average patient is low, the 'incongruity ratio' may be used as an index to assess whether or not a particular cycle may be futile and should therefore be abandoned.

Detailed understanding into the physiology of ovarian response to COH under different conditions, is however needed to help the clinician avoid incongruent or asymmetric follicular development in order to improve success rates. Whether or not the antioestrogenecity of clomiphene citrate (Rajan 1990) has any role to play in determining the lag in endometrial receptivity, is however an important point of consideration. Further studies correlating these two obligatory parameters are merited.

Reference

1.Rajan R. J of obst and Gyn of India: 40,476; 1990.
2. Rombauts, Webster Debbie, Wood Carl E, Healy David L; Fertil Sterile Vol. 66, 987; 1996.