**INTRODUCTION**

Determination of plasma progesterone was a complementary tool before the introduction of GnRH analogues in ART cycles to detect premature endogenous LH surge. Current use of GnRH agonist and antagonist effectively prevent the premature LH surge thus limited the determination of progesterone level.\(^1\) During pituitary desensitisation estimation of progesterone level give worth value about the activity of corpus luteum. Early follicular phase cyst detection at ultrasound needs estimation of plasma progesterone to know the functional nature of the cyst.\(^2\) Some report short term GnRH agonist protocol and GnRH antagonist protocol used to prevent premature LH surge also elevate progesterone at the time of stimulation.\(^3-5\) Hence Delaying administration of gonadotrophin for 1-2 days usually normalize progesterone value in patients.\(^5\) It has been recommended to measure plasma level before starting stimulation in GnRH antagonist protocol to postpone if progesterone values are >1.4ng/ml.\(^3\) Some reports showed that increased plasma level progesterone during follicular phase may be adversely affect follicular development, oocytes quality and success rate of IVF cycles but other studies showed no effect.\(^6-8\)
Purpose of this study was to evaluate the in vitro fertilisation outcome in patients having normal or elevated day-2 serum progesterone level undergone IVF by using GnRH antagonist.

METHODS

This retrospective study was conducted in Institute of reproductive medicine and women’s health unit of madras medical mission during the period Jan2013 to March 2014. Patients were considered once in the study. Patients those were <39 years, not received hormonal treatment in the cycle preceding treatment with fresh embryo transfer were included in the study. Patients those were >39 years, previous history of hormonal treatment in the cycle preceding stimulation and frozen embryo transfer were excluded from the study. All patients underwent day 2 serum estradiol, luteimising hormone and serum progesterone and antral follicle count before stimulation. Ovarian stimulation was started with recombinant FSH on same day and GnRH antagonist injections started from day 6 of stimulation. Final oocyte maturation was induced by administrating inj human chorionic gonadotrophin when at least 3 follicles of ≥18 mm in size during trans vaginal ultrasonography. Oocytes retrieval was performed 35 hours after HCG administration and ICSI was done in all patients. Embryo transfer was done on day 2 or day 3 after retrieval with good quality of Grade A embryo. Luteal support was supplemented with vaginal administration of natural micronized progesterone 400mg twice daily dose from day of egg collection till 12 weeks of gestation. According to the Day-2 serum progesterone level the total no of cases (N=151) divided into two groups normal P level (≤1.5 ng/ml) group (N=116) and elevated P level (>1.5 ng/ml) group (N=35) respectively. Total dose of gonadotropins, days of gonadotrophin injections, no of eggs collected, positive pregnancy rate, clinical pregnancy rate and live birth rate were compared in between two groups. Statistical analysis was done by t-test, mann-whitney test and chi-square test.

RESULTS

Total 151 cases were included in the study during that period and according to their D2 serum progesterone they were divided into two groups. Out of 151 cases 116 patients had in normal P level (≤1.5 ng/ml) and 35 patients had elevated P level (>1.5 ng/ml), (N=35), Table 1 shows the demographic distribution of age, BMI and type of infertility in between two groups. The difference in BMI was statistically significant in between two groups.

<table>
<thead>
<tr>
<th>Parameters</th>
<th>P≤1.5, N=116</th>
<th>P&gt;1.5, N=35</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>31.46±4.129</td>
<td>32.69±5.465</td>
<td>0.156 NS</td>
</tr>
<tr>
<td>BMI</td>
<td>27.909±4.95</td>
<td>24.858±4.6</td>
<td>0.001</td>
</tr>
<tr>
<td>Primary infertility</td>
<td>93</td>
<td>27</td>
<td>0.697 NS</td>
</tr>
<tr>
<td>Secondary infertility</td>
<td>23</td>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows the comparison of stimulation characteristics in between 2 groups. No of antral follicle count was statistically significantly higher in group 1 when compared to group 2. Table 3 shows no statistically significant difference in the clinical pregnancy rate and live birth rate between two groups (p value-0.362).

<table>
<thead>
<tr>
<th>Outcome</th>
<th>P≤1.5, N=116</th>
<th>P&gt;1.5, N=35</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>β HCG negative</td>
<td>61 (52.6%)</td>
<td>19 (54.3%)</td>
<td>NS</td>
</tr>
<tr>
<td>Positive β HCG</td>
<td>55 (47.4%)</td>
<td>16 (45.7%)</td>
<td>NS</td>
</tr>
<tr>
<td>Clinical pregnancy</td>
<td>43 (37.06%)</td>
<td>12 (34.28%)</td>
<td>(0.362)</td>
</tr>
<tr>
<td>Live birth rate</td>
<td>38 (32.75%)</td>
<td>10 (28.57%)</td>
<td>(0.364)</td>
</tr>
</tbody>
</table>

DISCUSSION

Elevated early follicular phase progesterone levels in menstrual cycle indicates an inefficient luteolysis and its mechanism is still remain unclear. During early follicular phase adrenal gland contribute for progesterone secretion but late follicular phase progesterone is secreted mainly...
CONCLUSION

Based on systemic review and meta-analysis elevated early follicular phase progesterone levels the ongoing pregnancy rate. As the incidence is low and there is lack of effective treatment for elevated progesterone level the routine screening for early follicular phase progesterone is not recommended.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES


