The Cost-Effectiveness Analysis for Use of Dydrogesterone in Premenstrual Syndrome

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Premenstrual Syndrome (PMS) - a cyclical symptom that occurs during the premenstrual period and is characterized by somatic, neuropsychiatric, vegetative-vascular, metabolic and endocrine disorders.

Progesterone is a well-known drug for treatment of clinical symptoms of PMS.

In Russia the following drugs are used: micronized progesterone (Utrogestan®, oral and intravaginal administration); dydrogesterone (Duphaston®, oral); micronized progesterone (Krayon®, intravaginal).

These drugs are currently used for various gynecological indications, such as infertility, threatened miscarriage / habitual miscarriage, amenorrhea, dysfunctional uterine bleeding, dysmenorrhea, premenstrual syndrome, endometriosis and endometrial hyperplasia.
The primary objective of the study is to analyze pharmaco-economic expediency of administration dydrogesterone (Duphaston®) for premenstrual syndrome (PMS) treatment in comparison with oral micronized progesterone (Utrogestan®).
For the calculation of the efficacy were used data of clinical trials (n = 3)

<table>
<thead>
<tr>
<th>Author (year)</th>
<th>Study</th>
<th>(N of patients), age</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dennerstein L., et al. (1985)</td>
<td>A double blind crossover trial</td>
<td>(n=23), 18-45</td>
</tr>
</tbody>
</table>
METHODS

• The mathematical modeling with dydrogesterone or oral micronized progesterone was applied in the study.
• The model was constructed as follows: in each branch of the decision tree cost and efficacy were analyzed for a group of 100 patients (female aged 18 - 45 years) and per patient.
• Modeling duration was 3 months (therapy during three cycles).
• The incremental cost-effectiveness ratio (ICER) were counted.
• Results were evaluated as to the cost-effectiveness threshold.
• Efficacy was estimated on the basis of clinical trials.
• Calculation of cost included: the cost of treatment course with selected drugs; the cost of gynecologist’s consultations and diagnosis; the cost of inefficient therapy – costs of additional diagnostic examination.
• The comprehensive sensitivity analysis was performed.
Female with premenstrual syndrome

Administration of dydrogesterone (Duphastan®)

Effectiveness – symptoms were cured

Symptoms were not cured, further search for causes of the disease

Administration of micronized progesteron (Utrogestan®)

Effectiveness – symptoms were cured

Symptoms were not cured, further search for causes of the disease
Results

• The cost of the total course of therapy with dydrogesterone was more expensive in comparison with micronized progesterone – 123.67$ against 121.47$.

• Strategy of administration of dydrogesterone showed more efficacy (73%) in comparison with oral micronized progesterone (65%) - 8% increase of effectiveness.

• CERs for dydrogesterone and micronized progesterone were 169.41 and 186.87 respectively.

• The ICER for dydrogesterone amounts to 27.55$ per patient.

• The sensitivity analysis confirmed conclusions of the main scenario.
Costs were calculated on the basis of Russian prices (grls.rosminzdrav.ru), 2013.
Costs of treatment course with selected drugs: $62.55

Costs of gynecologist’s consultations and diagnosis: $20.94, $20.94

Cost of inefficient therapy – costs of additional diagnostic examination: $52.08
Cost, $

Efficacy, %

Duphaston

Utrogestan

62,5% 65,0% 67,5% 70,0% 72,5% 75,0%
## Incremental Cost-Effectiveness Ratio

<table>
<thead>
<tr>
<th>DRUGS</th>
<th>Efficacy,</th>
<th>Cost, $</th>
<th>CER</th>
<th>Additional efficacy</th>
<th>Additional cost, $</th>
<th>ICER, $</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duphaston</td>
<td>0.73</td>
<td>123.67</td>
<td>169.41</td>
<td>0.08</td>
<td>2.2</td>
<td>27.55</td>
</tr>
<tr>
<td>Utrogestan</td>
<td>0.65</td>
<td>121.47</td>
<td>186.87</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- The ICER for dydrogesterone amounts to 27.55$ per patient
CONCLUSION

The administration of dydrogesterone in PMS is economically expedient from the point of view of the cost-effectiveness ratio.

In addition, an increase in effectiveness was noted for the use of dydrogesterone.
List of References