PHARMAECONOMIC ANALYSIS OF EVEROLIMUS IMMUNOSUPPRESSIVE THERAPY AFTER RENAL TRANSPLANTATION

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Immunosuppressive therapy after organ transplantation is financed from federal budget in Russia, but only when certain drugs are prescribed, i.e. mycophenolic acid, mycophenolate-mofetil, cyclosporine, tacrolimus. Everolimus has demonstrated good efficacy and safety in renal transplantation patients but has not been included into federal drug provision program yet.

OBJECTIVE

To calculate cost difference between two approaches for immunosuppressive therapy after renal transplantation: everolimus plus reduced-exposure cyclosporine (Ev+Cyc_red) and mycophenolic acid plus standard-exposure cyclosporine (MA+Cyc_st) for Russian healthcare system.

METHODS

The calculation of the cost difference between alternative immunosuppressive strategies after renal transplantation.

The model probability was constructed to estimate costs of immunosuppressive therapy after renal transplantation. The model compares two scenarios when patient receives immunosuppressive therapy after renal transplantation: 1) Ev+Cyc_red, 2) MA+Cyc_st.

The 2-year time horizon was considered. The model was based on the results of randomized controlled trial (Cirkov et al., 2013) and the results of the expert survey (Ban, 2013).

The model takes into account the following types of direct medical costs:

- immunosuppressive therapy with Ev+Cyc_red or MA+Cyc_st;
- cytomegalovirus infection prevention;
- therapy of acute graft failure;
- hospitalization due to graft failure and subsequent hemodialysis;
- the model also takes into account the cost of treatment for adverse events:
  - leukopenia;
  - CMV infection;
  - CMV symptoms;
  - CMV disease;
  - hyperkalemia/calcemia;
  - asthenia;
  - urinary tract infection.

The model does not take into account the cost of therapy and medical assistance provided under comparable strategies in the same amount.

Direct medical costs were calculated from the Russian healthcare system point of view.

Indirect costs were estimated based on the Russian human capital model.

Budget impact analysis from federal drug provision program perspective

The Markov model was constructed to calculate the number of patients after renal transplantation, that will receive the Ev+Cyc due to the inclusion of everolimus into the drug provision program.

RESULTS

Ev+Cyc_red lead to cost reduction the 62.3 thousands (7%) per patient in a two-year period when compared with MA+Cyc_st. The reduction mainly results from less costs for immunosuppressive drugs in Ev+Cyc_red approach compared to MA+Cyc_st.

Table 1. The results of the Markov modeling number of patients after renal transplantation who will receive everolimus due to its inclusion in the federal drug provision program within 5 years

<table>
<thead>
<tr>
<th>Category of patients</th>
<th>1st year</th>
<th>2nd year</th>
<th>3rd year</th>
<th>4th year</th>
<th>5th year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients of 1st year after transplantation</td>
<td>166.7%</td>
<td>166.7%</td>
<td>166.7%</td>
<td>166.7%</td>
<td>166.7%</td>
</tr>
<tr>
<td>Patients of 2nd year after renal transplantation</td>
<td>-</td>
<td>425.6%</td>
<td>-</td>
<td>425.6%</td>
<td>-</td>
</tr>
<tr>
<td>Patients of 3rd year after renal transplantation</td>
<td>-</td>
<td>-</td>
<td>212.8%</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Patients of 4th year after renal transplantation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>219.3%</td>
<td>-</td>
</tr>
<tr>
<td>Patients of 5th year after renal transplantation</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>219.3%</td>
</tr>
</tbody>
</table>

CONCLUSIONS

Ev+Cyc_red is a cost-saving option for immunosuppressive therapy after renal transplantation in Russia when compared with MA+Cyc_st.

REFERENCES


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