Background

Erythropoietin analogues and intravenous iron supplementation are used to treat anemia in hemodialysis patients. Treatment guidelines suggest a target range for hemoglobin levels in hemodialysis patients of 6.8 to 7.4 mmol/l. Before start of the study, 23% of all hemodialysis patients in our hospital had hemoglobin levels within target range. In this study, we investigated if pharmacy-based dosing of darbepoetin was more effective in reaching target hemoglobin (Hb) levels than physician-based dosing.

Methods

- Single-center randomized, controlled trial, n=2x100
- Inclusion criteria
  - All hemodialysis patients treated with darbepoetin
- Follow-up of 13 months per patient
- Intervention group
  - Development of a treatment algorithm based on guidelines, summary of product characteristics, and expert opinion
  - Monthly dosing advice regarding darbepoetin and intravenous iron sucrose by a pharmacist
- Control group
  - Dosing of darbepoetin and intravenous iron sucrose as usual (by nephrologist only)
- Analysis
  - Exclusion of 15 patients as prespecified in the protocol
  - SPSS, non-parametric tests (Mann-Whitney)

Results

Figure 1. Proportion of hemoglobin levels within target range (median 23.1% vs 38.5%, p=0.001)

Table 1. Secondary endpoints (median)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Intervention group</th>
<th>Control group</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb &gt; 8.1 mmol/l</td>
<td>0.0%</td>
<td>7.7%</td>
<td>0.034</td>
</tr>
<tr>
<td>TSAT ≥ 20% and ferritin 200-500 mcg/l</td>
<td>21.1%</td>
<td>8.3%</td>
<td>0.003</td>
</tr>
</tbody>
</table>

Darbepoetin dosage per patient in the intervention group was 13 mcg/week lower than in the control group.

Conclusions

In hemodialysis patients, pharmacy-based dosing of darbepoetin and iron sucrose increases the percentage of patients within target range for hemoglobin levels as well as with adequate iron storage.

Discussion

The increase in percentage of hemoglobin levels within target range was not as high as expected, probably due to the high frequency of infections.

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