Inter-Country Cost-Effectiveness Differences Between Naratriptan and Rizatriptan for the Acute Migraine in the Netherlands and Spain

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Abstract

The purpose of this study was to investigate the differences in cost-effectiveness results of naratriptan and rizatriptan therapy for acute migraine attacks between two Western European countries, The Netherlands and Spain. Methods: cost-effectiveness analysis from the healthcare financer perspective, in the context or primary care, in The Netherlands and Spain, using a model based on a decision tree, which incorporates the direct healthcare costs and the probabilities associated with each of the possible outcomes. The average cost-effectiveness ratio (ACER) and incremental cost-effectiveness ratio (ICER) were obtained. Results: rizatriptan resulted to be more efficient than naratriptan in terms of cost-effectiveness in both countries. Close ACER results for both drugs in both countries were found, specially regarding naratriptan, but their ICER results show wider variations. Our results suggest that inter-country variations in cost-effectiveness could require a detailed analysis for each drug or groups of them.

Introduction

Migraine is a disease with high population prevalence, and it is associated also with a substantial social and economic burden (1-3). Triptans are common therapies for moderate to severe migraine attacks, and for mild to moderate attacks that are unresponsive to analgesics or nonsteroidal anti-inflammatory drugs (NSAIDs) (3), but their high costs require a careful cost-effectiveness analysis in order to justify their use (4). Diverse pharmacoeconomic studies on triptans therapy for migraine have been performed (5), but studies comparing inter-country cost-effectiveness differences are scarce. We hereby present a comparative cost-effectiveness evaluation of two triptan therapies for migraine (naratriptan and rizatriptan) in The Netherlands and Spain, in order to assess if there are substantial differences in their cost-effectiveness results.

Methods

The aim of this study was to investigate the cost-effectiveness differences between naratriptan and rizatriptan therapies for migraine acute attacks, in the context of primary care, from the healthcare-financer perspective, in The Netherlands and Spain. The considered therapeutic doses were: naratriptan 2.5 mg, and rizatriptan 10 mg, as a single dose, orally administered. The analysis was performed for oral tablets only, but excluding oral lyophilisate rizatriptan. The model used for the analysis was based on a decision tree, incorporating the direct healthcare costs and the probabilities associated with each of the possible outcomes. An eligible case, considered at the initial decision node of the model, was assumed to be a patient, previously diagnosed with migraine according to the International Headache Classification (ICHD-2) (6), going to an outpatient family doctor. The main branches of the tree represent the management options. The probabilities associated with the possible outcomes were obtained from the literature (average effectiveness) (7). The assumption was made that two hours after a triptan single oral dose a patient would be in one of the two possible outcomes, i.e., effectiveness (relief of pain), or ineffectiveness (no relief of pain). These outcomes are represented in the form of end nodes of the decision tree (Illustration 1). The analysis of the decision tree model resulted in final probabilities of a theoretical patient ending up in one of the two possible outcomes, i.e., effectiveness (relief of pain), or ineffectiveness (no relief of pain). These outcomes are represented in the form of end nodes of the decision tree (Illustration 1). The analysis of the decision tree model resulted in final probabilities of a theoretical patient ending up in one of the two possible outcomes, i.e., effectiveness (relief of pain), or ineffectiveness (no relief of pain). These outcomes are represented in the form of end nodes of the decision tree (Illustration 1).
Drug directories (10, 11). Online pharmacies’ prices were not included in the study. The costs of triptans’ single doses were calculated taking into account the smallest size of package. Illustration 2 summarizes the costs included in the model. All costs were expressed in Euros. The cost of the visits to the doctor was updated to year 2011 assuming a 3% annual discount rate. Employing standard methods of cost-effectiveness analysis, the costs of each branch of the model were obtained. Average cost-effectiveness ratio (ACER) was calculated for each of the drugs, being the total cost in each strategy divided by its effectiveness’ probability. The incremental cost-effectiveness ratio (ICER) was also obtained by dividing the difference in expected costs of both alternatives by the difference in efficacy of these two alternatives. Tree branches probabilities, costs calculations and cost-effectiveness analysis, were performed using Microsoft Excel©.

Results

Substantial cost differences were found from one to another country, been up to 10.23% higher for the visit to doctor, 71.89% (cost of rizatriptan), and 52.08% (naratriptan). Costs of both drugs were higher in Spain, whereas cost of the visit to doctor was higher in The Netherlands. With regard to cost-effectiveness, the results of ACER and ICER obtained for both countries, listed in Illustration 3. Rizatriptan resulted to be more efficient than naratriptan in terms of cost-effectiveness in both countries. When comparing the cheapest therapy (naratriptan) with the most effective one (rizatriptan), ICER was 0.93 Euro per unit of effectiveness gained in The Netherlands, and 4.59 in Spain (Illustration 3).

Discussion

Pharmacoeconomics studies contribute to decide on how to allocate resources in health care systems, and they represent a useful tool when deciding to finance a therapy, especially in the case of high-prevalence diseases and/or when the pharmacological treatment implies a high cost, as it happens with migraine. This study presents a comparative costs-effectiveness evaluation between two triptans in two West European countries, and it was concluded that rizatriptan proved to be more efficient than naratriptan in terms of cost-effectiveness, in the context of primary care, both in The Netherlands and Spain.

It is well known that cost-effectiveness analyses of therapies can vary from country to country even in Western Europe, and that these variations are not systematic (12,13). In spite of this, we found close ACER results for both drugs in both countries, specially regarding naratriptan, but their ICER results show wider variations. This study was performed under the assumption that the patient had already been diagnosed with migraine. Therefore the costs of the diagnostic process have not been taken into account and have not been included in the analysis. The perspective of the evaluation focused on the side of the healthcare financer. The analysis was restricted to the effectiveness of the drugs as such and thus those costs associated with adverse drugs effects were not reflected in the model, as it was assumed that none of them were severe in nature and they would not persist long-term. The study was conducted in the framework of an outpatient visit to the family doctor and so costs associated with emergency care were not included either. Beyond the possible limitations of the analytical model we used, our results suggest that inter-country variations in cost-effectiveness could require a detailed analysis for each drug or groups of them.

References

Illustrations

Illustration 1

Illustration 1. Decision tree, possible outcomes and associated probabilities
Illustration 2

<table>
<thead>
<tr>
<th></th>
<th>Costs</th>
<th>References</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Spain</td>
<td>The Netherlands</td>
</tr>
<tr>
<td>Visit to Family Doctor</td>
<td>20.73</td>
<td>22.85</td>
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<tr>
<td>Naratriptan (*)</td>
<td>6.22</td>
<td>4.09</td>
</tr>
<tr>
<td>Rizatriptan (*)</td>
<td>7.46</td>
<td>4.34</td>
</tr>
</tbody>
</table>

All costs are expressed in Euro values of the year 2011. (*) Single dose

Illustration 2. Direct healthcare costs included in the model
Illustration 3

<table>
<thead>
<tr>
<th>Drug</th>
<th>ACER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Naratriptan</td>
<td>66.16</td>
</tr>
<tr>
<td>Rizatriptan</td>
<td>37.59</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ICER</th>
<th>Spain</th>
<th>The Netherlands</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.55</td>
<td>0.93</td>
<td></td>
</tr>
</tbody>
</table>

Illustration 3. Average cost-effectiveness ratios (ACER) and incremental cost-effectiveness ratios (ICER) of the therapies
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