Economic Burden Of Idiopathic Pulmonary Fibrosis In Spain: The OASIS Study


1Servicio de Neumología, IIS-Hospital Universitario Fundación Jiménez Díaz, CIBERES, Madrid, Spain; 2Servicio de Neumología, IIS-Hospital Universitario Vall Hebron, Barcelona, Spain; 3Servicio de Neumología, Hospital Universitario Virgen de las Nieves, Granada, Spain; 4Boehringer Ingelheim España, Spain; 5Adelphi Targs, Barcelona, Spain.

INTRODUCTION

• Idiopathic pulmonary fibrosis (IPF) is a chronic, progressive and fatal disease of unknown cause, occurring primarily in older adults, limited to the lungs, and associated with the histopathological and/or radiologic pattern of usual interstitial pneumonia.

• As the disease progresses, patients' lung function declines with the consequent worsening of dyspnea and quality of life impairment. [2]

• It is estimated that IPF affects about 7,500 people in Spain. [3]

• As the disease progresses, patients' lung function declines with the consequent worsening of dyspnea and quality of life impairment. [2]

• According to Delphi panel study, management of patients with IPF in Spain has a high economic impact on the national health system, especially for those patients with rapid disease progression and occurrence of IFX exacerbations. [4]

• It was of great interest to develop studies analyzing the Cost-of-Impairment and Cost-of-Illness associated with IPF in Spain. [5]

• Secondary objectives aimed to explore the determinants of IPF costs and the cost variation associated to FVC decline along the study.

AIM

• This study aims to estimate and compare the economic impact of IPF according to forced vital capacity (FVC) % predicted level in adult patients through estimation of direct and indirect costs associated with the disease during 1 year.

• Secondary objectives aimed to explore the determinants of IPF costs and the cost variation associated to FVC decline along the study.

METHODS

• The OASIS Study is a prospective, observational, multicentric study based on newly collected data of patients with a confirmed diagnosis of IPF in secondary care settings (Pneumology Services) followed during 12 months.

• As per clinical practice, three visits per patient were performed (baseline, the closest visit to 6 months –T6- and 12 months after baseline–T12-).

• The inclusion period was from December 2017 to July 2018. The mean (standard deviation) (SD) follow-up were 12.40 (1.07) months.

• A total of 204 patients 40 years of age diagnosed with IPF according to last ATS/ERS/ALAT guideline [1], who met the selection criteria were included from 28 sites in Spain. Patients were classified in 3 groups according to their FVC at baseline: FVC < 50 %, FVC 50-80 % and FVC >80 %.

• The use of resources was collected at Y6 and T12 in addition to those related to exacerbations.

• The direct costs over the 12-months follow-up period were quantified by multiplying the reported units of resource use by the unitary cost obtained from Spanish databases. Indirect costs were estimated using the cost-opportunity for informal caregiver and considering the salary cost according to the Spanish Statistics National Institute.

• Costs were converted to 2018 euros using the published consumer price index.

• Total annual costs were calculated at patient level as the sum of direct health care costs, direct non-health costs and indirect costs.

• A list of included sources of costs is provided in Table 1.

• To estimate cost variation associated to FVC decline, patients were classified according their relative FVC decline along the study in 3 subgroups: >10%, 10% to 5%, 5% to baseline.

RESULTS

Population characteristics

• 77% of patients were male, average age (SD) 70.8 (7.6) years of age diagnosed with IPF 1.92 years ago, in average (Table 2).

• At baseline, FVC was <50%, 50–80% and >80% in 77%, 14.7% and 5.5% of patients, respectively (Table 2).

Table 2. Characteristics of patients at baseline.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>FVC&lt;50%</th>
<th>FVC 50-80%</th>
<th>FVC &gt;80%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td>153</td>
<td>42</td>
<td>4</td>
<td>0.0001</td>
</tr>
<tr>
<td>Age (years)</td>
<td>71.2 (7.6)</td>
<td>70.8 (7.6)</td>
<td>73.3 (4.7)</td>
<td>0.1273</td>
</tr>
<tr>
<td>Female patients</td>
<td>56</td>
<td>21</td>
<td>1</td>
<td>0.5105</td>
</tr>
<tr>
<td>Current smokers</td>
<td>25</td>
<td>6</td>
<td>0</td>
<td>0.0337</td>
</tr>
<tr>
<td>Known smoking history</td>
<td>68</td>
<td>20</td>
<td>3</td>
<td>0.0233</td>
</tr>
<tr>
<td>Known smoking status</td>
<td>68</td>
<td>21</td>
<td>3</td>
<td>0.0233</td>
</tr>
<tr>
<td>Orthopaedic material</td>
<td>13</td>
<td>2</td>
<td>0</td>
<td>0.1067</td>
</tr>
</tbody>
</table>

Annual IPF-related costs

• 180 patients were evaluated for costs analysis.

• The mean total annual IPF-related costs per patient was 223.68, 46.75, with statistically significant differences (p<0.0001) between groups: 38,923.57 € for the FVC<50% group, 22,613.68 € for the FVC 50-80% group and 20,369.94 € for the FVC>80% group.

• Statistically significant differences were observed among FVC% predicted groups in the annual direct and annual non-direct costs (p<0.0001 and p<0.0001, respectively).

Table 3. Annual IPF-related costs in the total sample and according to FVC % predicted value at baseline (euros).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>FVC&lt;50%</th>
<th>FVC 50-80%</th>
<th>FVC &gt;80%</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total sample</td>
<td>153</td>
<td>42</td>
<td>4</td>
<td>0.0001</td>
</tr>
<tr>
<td>Mean (SD)</td>
<td>223.68 (46.75)</td>
<td>46.75 (18.96)</td>
<td>69.29 (16.80)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Indirect costs</td>
<td>109.69 (516.15)</td>
<td>506.26 (1023.17)</td>
<td>82.14 (464.45)</td>
<td>0.0065</td>
</tr>
<tr>
<td>Direct health costs</td>
<td>92.07 (572.4)</td>
<td>1,089.01 (3,412.5)</td>
<td>31.15 (222.5)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Direct non-health costs</td>
<td>23.92 (106.8)</td>
<td>36.48 (125.2)</td>
<td>37.86 (17.9)</td>
<td>0.0001</td>
</tr>
<tr>
<td>Patients receiving antifibrotic treatment, n (%)</td>
<td>14 (63.6%)</td>
<td>8 (36.4%)</td>
<td>2 (18.2%)</td>
<td>0.0006</td>
</tr>
</tbody>
</table>

Costs associated with FVC decline

• No differences in total annual IPF-related costs were observed among patients with FVC<50% and FVC>80% (p=0.0223).

• Total annual IPF-related costs decreased 9,207.12 € in patients with a follow-up of at least 6 months. Costs associated with FVC decline were: 21,606.03 € for the FVC<50% group, 22,613.68 € for the FVC 50-80% group and 20,369.94 € for the FVC>80% group (Table 3).

• To receive antifibrotic treatment (p=0.0001), total annual IPF related costs decreased 20,557.00 € in patients who were not treated with antifibrotics.

Costs associated with FVC decline (Relative change)

• To receive antifibrotic treatment (p=0.0001), total annual IPF related costs decreased 20,557.00 € in patients who were not treated with antifibrotics.

CONCLUSIONS

• In Spain, IPF is associated with a high economic burden which is significantly higher among patients with a more impaired FVC at baseline.

• Total annual IPF-related costs were estimated in 23,361 € per patient, the direct cost having the greatest weight to the total costs.

• Either having pulmonary embolism associated with IPF or being treated with antifibrotics are related with increasing the annual IPF-related costs.

• Maintaining patients at early disease stages by slowing IPF progression seems relevant to reduce the economic impact of IPF.

References


Disclosures/disclaimer

This study was supported by Boehringer Ingelheim International GmbH (the sponsor). The authors report no conflicts of interest or competing interests. Funding was provided by Boehringer Ingelheim International GmbH. The funder had no role in any aspect of the study or preparation of the manuscript. The study sponsor was not involved in the study design, in the collection, analysis and interpretation of data, in the writing of the report and in the decision to submit the article for publication...