Treatment compliance and self-medication in asthma in France

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ABSTRACT: A study was carried out among asthmatic patients in order to determine the compliance to treatment and self-medication. Data collection used a self-administered postal questionnaire as tested in a previous study. The population under study included 450 asthmatic patients; 370 answered; their mean age was 47±16 yrs and 44% were men. An aerosol was the preferred route of administration (41%). Eighty two percent of the patients tended to reduce the doses following improvement; 80% claimed to know treatment for attacks; 90% had already been using an inhaler, although only 62% had been shown how to use one. Forty eight percent had already bought drugs without prescription, especially patients within the 25-34 yrs age group. This study is consistent with similar surveys performed in other populations. Improved quality of information about treatments and how to use drugs is higher in patients with chronic forms of asthma involving unpredictable acute attacks.


Sudden acute attacks of dyspnoea are typical of asthma, along with its unpredictable evolution, which results in anything between a very long remission period and a permanent dyspnoeic state with periodic paroxysms, amounting to a chronic invalidating disease. Treatment compliance is a subject of concern in paediatrics, as well as in adult medicine [1, 2].

Doctors are frequently called during attacks [3, 4], but patients tend to modulate treatments during the more or less prolonged calm periods between fits of paroxysmal bronchospasm. Such adaptive therapeutic improvisation is conditioned by many factors [5, 6], among which are subjective discomfort as felt by individual patients, level of information [7] about the disease and its treatments, constraints and negative side-effects attached to some drugs.

The aim of the present study was to determine, in a group of asthmatic patients, their compliance and behaviour towards treatment, self-medication, as well as their preferences for the forms of administration of prescribed drugs and their knowledge about asthma drugs.

Patients and methods

Patients

The population admitted to this study was composed of asthmatic patients, male and female, aged 16-70 yrs. The diagnosis of asthma was established by chest physicians, from the clinical history, physical examination, and confirmed by bronchial challenge: hyper-responsiveness to methacholine which caused a 20% fall in forced expiratory volume in one second (FEV1) from the pre-challenge level and relief of this by administration of a bronchodilator drug (salbutamol). Of the patients, 33% were from a public chest clinic, 12% from a private one and 55% from an association of asthmatic patients called "Newoue Souffle". All the patients were seen regularly in out-patient units, and those who had previously participated in this kind of survey were excluded. Four hundred and fifty patients were eligible.

Methods

Data collection was made through a postal, anonymous self-administered questionnaire, which had been tested in previous studies [8]. Doctors did not have access to comments about prescriptions made by patients. The first set of questions focused on demographic features: sex, age, family situations and social positions of the patients. The second part focused on the disease and its severity. The third part inquired about the treatment prescribed during the preceding twelve months: drug forms and route of administration. The fourth part inquired about the drug delivery system preferred by the patients and motives for their preferences: only one form was allowed. The fifth part dealt with treatment compliance: tendency to change dosage and motives alleged, with special emphasis on unpleasant effects. The sixth part questioned the patients about their attitudes towards self-medication, the effects of treatments and their modes of administration, and how they would welcome information about these.
Statistical analysis

Data analysis used the \( X^2 \) test and the Boyd and Doll adjustment method for age, sex, and socio-economic status.

Results

Of the 450 eligible asthmatic patients, 370 (82%) returned the questionnaire. They were aged 24–65 yrs (average age 47 yrs, standard deviation 16.9 yrs). One hundred and sixty three (44%) subjects were men. Two hundred and fifty three (70%), 70 were unmarried (19%), and 41 were divorced (11%). Forty four percent of the patients were retired or did not work. The remaining 56% were independent professionals or company executives (12%), mid-scale white-collar (34%) or blue-collar workers (6%), or shop-keepers, farmers and managers (4%).

Degree of severity of the disease

Asthma had appeared before the age of 15 yrs in 32% of the patients, between 15–35 yrs in 32% and after 35 yrs in 36%. Of the patients, 31% suffered daily attacks; 36% had at least one attack weekly, 25% had between one and four attacks per month. A significant difference was seen between the three centres (p<0.01): 38% of the patients from the association “Nouveau Souffle” had a daily attack versus 29% in the public clinic and 6% in the private one. This difference remained significant after taking into account socio-economic status: the patients of the association “Nouveau Souffle” had more severe asthma. Twenty seven percent of the patients had been hospitalized for asthma, 16% of whom more than once. Hospitalization was related to the socio-economic status. The retired and unemployed people were hospitalized more often than managers. This relationship remained after taking sex into account (p<0.01).

Therapy received during the last 12 months

All patients were receiving long-term treatment during remission periods, a majority receiving multiple drugs (table 1), and only 9% (n=34) one type of drug. Twenty-three percent (n=86) were using two types of drugs, 66% (n=244) three types, and 28% (n=103) four types of drugs, e.g. theophylline preparations and/or \( \beta_2 \)-adrenergic drugs and/or corticosteroids (oral, inhaled or injectable). Other drugs were received by the patients, such as antihistaminic drugs (oxitropium bromide, ipratropium bromide), antiallergic drugs (sodium cromoglycate, ketotifen).

Preferred drug delivery system: motives for preference

Table 2 lists preferred drug delivery systems. Distinct of the form of administration is one of the motives for abandoning a cure; hence our asking patients what form of treatment they would choose “if all medicines produced identical effects”. Answers diverged quite sharply from actual prescriptions. Patients seemed to prefer aerosols (41%) with tablets as second choice (26%). Nevertheless, 16% of the patients preferred more than one drug. Motives for drug preferences were: rapid onset of relief (73%) and related absence of side effects (64%).

Ninety percent of those patients who preferred aerosols to other drug delivery systems did so because of immediate action.

Compliance with treatment

Eighty-two percent of patients admitted interrupting their cure or reducing doses when symptoms improved.

This tendency was not related to age, sex, social position and family situation, but to the origin of patients; those belonging to a patients’ association were more likely to curtail their treatment than patients from the hospital or private consultations (p<0.02). Forty eight percent of the

Table 1. – Drugs taken during the previous 12 months

<table>
<thead>
<tr>
<th></th>
<th>Tablets</th>
<th></th>
<th>Syrup</th>
<th>Aerosol</th>
<th>Suppository</th>
<th>Daily</th>
<th>Weekly</th>
</tr>
</thead>
<tbody>
<tr>
<td>Theophylline preparations</td>
<td>276</td>
<td>76</td>
<td>10</td>
<td>3</td>
<td>–</td>
<td>–</td>
<td>100</td>
</tr>
<tr>
<td>( \beta_2 )-adrenergic drugs</td>
<td>57</td>
<td>16</td>
<td>11</td>
<td>3</td>
<td>251</td>
<td>69</td>
<td>–</td>
</tr>
<tr>
<td>Corticosteroids</td>
<td>159</td>
<td>44</td>
<td>9</td>
<td>2</td>
<td>84</td>
<td>23</td>
<td>–</td>
</tr>
<tr>
<td>Other drugs*</td>
<td>86</td>
<td>23</td>
<td>5</td>
<td>1</td>
<td>112</td>
<td>31</td>
<td>–</td>
</tr>
</tbody>
</table>

*: among which are antiallergic drugs and anticholinergic drugs.
patients receiving theophylline preparations and 38% of the patients receiving corticosteroids reduced doses when symptoms improved (14% with steroid aerosols).

Thirty-eight percent of the patients reduced doses of \( \beta_2 \)-adrenergic aerosols, and 9% reduced \( \beta_2 \)-adrenergic tablets.

Reasons for treatment reduction were: unpleasant side-effects (39%), possible dangers (37%) and, in a few instances, mouth dryness (12%), bronchial irritation (9%), or problems with the manipulation of aerosols (7%).

**Observed side-effects**

Ninety-four percent of patients referred to unpleasant effects of their treatments. This was not related to age or family situation, but to sex: 98% of women complaining about side-effects, against only 89% of men (p<0.01). This difference persisted after socio-economic status adjustment, although no correlation appeared between side-effects and socio-economic status after sex adjustment.

Unpleasant effects were found in 78% of the patients with theophylline, 45% with \( \beta_2 \)-adrenergics, 55% with corticosteroids and 13% with antiallergic drugs. These side-effects are shown in table 3.

**Table 3. - Anti-asthma treatment: side-effects**

<table>
<thead>
<tr>
<th>Side-effects</th>
<th>Total complaints</th>
<th>Theophylline</th>
<th>( \beta_2 )-adrenergic drug</th>
<th>Corticosteroid</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palpitations, tachycardia</td>
<td>55</td>
<td>35</td>
<td>30</td>
<td>7</td>
</tr>
<tr>
<td>Nervousness</td>
<td>61</td>
<td>46</td>
<td>16</td>
<td>3</td>
</tr>
<tr>
<td>Insomnia</td>
<td>52</td>
<td>41</td>
<td>8</td>
<td>13</td>
</tr>
<tr>
<td>Tremor</td>
<td>43</td>
<td>24</td>
<td>21</td>
<td>7</td>
</tr>
<tr>
<td>Pyrosis</td>
<td>28</td>
<td>13</td>
<td>4</td>
<td>17</td>
</tr>
<tr>
<td>Nausea, vomiting</td>
<td>27</td>
<td>21</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Induction of attack</td>
<td>9</td>
<td>1</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Weight gain</td>
<td>35</td>
<td>6</td>
<td>3</td>
<td>28</td>
</tr>
<tr>
<td>Muscle strength loss</td>
<td>35</td>
<td>11</td>
<td>6</td>
<td>22</td>
</tr>
<tr>
<td>Haematoma</td>
<td>16</td>
<td>2</td>
<td>1</td>
<td>13</td>
</tr>
<tr>
<td>Bone pains</td>
<td>23</td>
<td>4</td>
<td>3</td>
<td>17</td>
</tr>
</tbody>
</table>

**Knowledge of treatments among patients**

Eighty percent of the patients declared knowledge of the properties of drugs. This knowledge was unrelated to sex, family situation or social status, but women knew the treatment of attacks better than men (86% against 77%) (p<0.05). This difference no longer existed regarding long-term treatment. Knowledge of the attack treatment was related to the severity of asthma. It was better among the patients who received corticosteroid drugs or \( \beta_2 \)-adrenergic aerosols (p<0.01). This relationship remained significant after taking sex into account.

Eighty percent had been taught what they knew by their doctors, 6% by pharmacists, and 43% by reading printed directions.

**Purchase of drugs without prescription**

In spite of the fact that, in France, no anti-asthma drugs are delivered without prescription, except some drugs with low dosage theophylline, 48% of the patients admitted having bought drugs without a prescription. This habit was significantly related to age (p<0.01), number of hospitalizations and socio-economic status (p<0.01). Patients between 25-34 yrs had a higher tendency to buy drugs without prescription than patients over 65 yrs (65% versus 38%) and this relationship remained after taking into account socio-economic status. Patients with a highly responsible status had a higher tendency to buy drugs without prescription (60%) versus non-working patients (38%); however, this relationship disappeared after age adjustment. This means that automedication was significantly related to age and not to social status. Patients who had had more than two hospitalizations had a higher tendency to buy drugs without prescription (64% versus 46% of those who had not been hospitalized). This relationship persisted after taking into account socio-economic status. Probably because of this habit, 87% of the patients wished to be given a predetermined prescription in anticipation of the next attack they would have to face.

**Information demand**

A majority of patients would have welcomed information about their disease and its treatment. Sixty seven percent have appreciated written information, 21% films or video-cassettes, and 12% both.

**Discussion**

Treatment compliance was studied in 370 asthmatic patients. In France, as in other Western countries, anti-asthma maintenance treatment is based on the administration of \( \beta_2 \)-adrenergic drugs given by inhalation, together with oral or inhaled steroids. In contrast
to practice in some other countries, theophylline is usually associated with these two drugs, given in tablets, suppositories or injections. In some cases anticholinergic drugs are prescribed in aerosols (ipratropium or oxitropium) and antiallergic drugs are used in long-term treatment (cromoglicate, ketotifen): though they are entirely different types of drugs, they were pooled in a single answer-"other drugs"-as a simplification for the patients, especially since the consulting physicians familiar with standardized questionnaires did not provide further information about the answers.

This study involved only a small group of patients treated in two Paris out-patient units (public and private) or belonging to a patients' association: it is not representative of asthmatic patients as a whole. Therefore, our conclusions are only valid for the group of patients under survey.

Severity of asthma was assessed from history and clinical features: onset of the disease, number of attacks, and hospitalizations. Our results suggest that the population under study may be said to suffer from severe asthma and strict therapeutic compliance could be expected from the patients. Strict compliance to treatment is of special importance for such patients. In spite of this, as many as 82% of them had a tendency to stop their treatment when their condition improved or because of side-effects.

There is no doubt that perceptions of the disease [6] and its severity [10], and awareness of the efficacy of drugs play a major role in therapeutic compliance by patients. In a series of retrospective enquiries bearing upon asthma fatalities [11, 12] the authors identified the same responsibility of the patients in failing to assess the severity of their disease. In order to avoid this, it is necessary to build up a good relationship between patients and doctors.

The routes of administration of drugs are of special importance, and patients' preferences, rather than doctors', should prevail as much as possible, allowing for biological characteristics of active substances. Therefore, the questionnaire was composed of questions on the treatment prescribed and on the preferred drug delivery system if all the drugs were equally efficient: an answer was definitely required to this latter question. Of the patients 40% preferred aerosols, 27% tablets and 11% injections. This is important since most drugs are administered through aerosols. Some patients are opposed to this route of administration or think it is less effective, perhaps through lack of information.

Side-effects of medicines should be taken into account, since 94% of patients refer to them. Patients should be very carefully informed about them, and they should be taught how to distinguish them from toxic effects. In France, this is most important, since theophylline is systematically used (90% of the patients) and possible adverse effects are known: insomnia, tremor in 50% of the cases (table 3).

It is useful to give patients an additional prescription order in anticipation of future attacks, in order to allow some flexibility in their management of paroxysmal attacks. This behaviour could avoid delivering drugs without prescription (48%). It is crucially important that prescriptions be clear and understandable. They should be written together with the patients, and a clear-cut distinction should be made between therapeutic behaviour during attacks on the one hand, and maintenance treatment on the other. In a previous study [8], we found that owing to the acute character of the disease, one patient out of four self-managed his own treatment and increased drug dosage during attacks, while seven patients out of ten spontaneously interrupted their long-term cure during remission periods, independently of medical advice. When asked, 76% of the patients were compliant to their doctors' prescriptions.

Such facts and the present study confirm that correct compliance to treatment requires full-time availability on behalf of physicians as well as controlled self-management of treatments by the patients themselves, after they have been duly informed about drug side-effects and have been well trained to use drugs without risk in the best possible way.

References

10% avaient déjà utilisé un inhalateur, mais 62% seulement avaient eu une démonstration sur la façon de s’en servir. 48% avaient acheté des médicaments sans ordonnance, cette proportion était plus élevée parmi les malades âgés de 25 à 34 ans. Les résultats de cette étude concordent avec ceux d’études régulières menées dans d’autres populations. L’amélioration de la qualité de l’information en ce qui concerne le traitement et le mode d’utilisation des médicaments est particulièrement importante chez des sujets atteints d’un état chronique, pour lequel on peut éviter les crises aiguës grâce à un traitement rapidement appliqué.