Consequences of poor compliance in chronic respiratory diseases

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Undoubtedly, patient compliance to treatment is a very important issue in the management of chronic respiratory diseases. Reviewing the literature, we found that the majority of studies are dealing with the magnitude of the problem of poor-compliance, with methods trying to identify the non-compliant patient and with ways to enhance compliance. Very few studies are directly addressing the issue of consequences of poor-compliance. It is obvious that, regarding the complexity of the problem, it is difficult to estimate the kind and the significance of consequences of poor compliance.

First, we have to identify with accuracy the non-compliant patient (a topic that has been discussed by others during this symposium) and secondly to apply scientific methods to relate poor compliance to potential consequences. Thus, it was not apparent that a number of reported consequences were, with sufficient evidence, the result of poor compliance.

However, in this short report, we are going to review reported consequences of poor compliance in tuberculosis, in chronic bronchial asthma and in patients with chronic obstructive pulmonary diseases (COPD).

Consequences of poor compliance in tuberculosis

It is well known that even the short-courses of treatment in tuberculosis are long enough to affect patient’s compliance. A variety of consequences have been reported to be due to poor compliance with prescribed treatment for tuberculosis and these could affect either the patients or public health. In table 1 the common consequences to poor-compliance concerning both patient’s and public’s health problems are shown. It was reported that poor compliance leads to treatment failure with relapses, additional treatment and increased resistance of mycobacteria to antituberculous drugs [1]. In a well designed study Combs et al. [2] showed that the rate of failure to convert to negative sputum by the 16th week of treatment, was 15–20% for the non-compliant patients and only 1–6% for the compliant group of patients. This report is in agreement with other studies reporting increased transmission and morbidity of the disease, especially when it was related to alcoholism. Drug toxicity due to overdose has been attributed to poor-compliance; furthermore there have been reports of increased mortality of the disease [3]. It is worth mentioning that poor compliance was reported in patients on preventive therapy with isonazid but no study was found on its relationship to mycobacterial resistance to the drug [4].

Table 1. Consequences of poor compliance in tuberculosis

<table>
<thead>
<tr>
<th>Patient's health</th>
<th>Public health</th>
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<tr>
<td>1. Treatment failure</td>
<td>1. Failure to eliminate the disease</td>
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<tr>
<td>2. Replace</td>
<td>2. Additional expenses (Public)</td>
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<td>3. Additional treatment</td>
<td>3. Increased drug resistance</td>
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<td>4. Additional expenses</td>
<td>4. Additional hospital treatment</td>
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<tr>
<td>5. Drug toxicity</td>
<td>5. Prolonged communicability</td>
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References


Consequences of poor compliance to antituberculous treatment on public health are more serious and affect the transmission of the disease. Mason [4] and others, consider that poor compliance is the major factor of failure to eliminate tuberculosis, e.g. by transmission of drug resistant mycobacteria. A significant public health problem due to poor compliance is the potential contamination of the high risk, immunosuppressed patient with mycobacteria. A poorly compliant drug addict with AIDS and tuberculosis could easily spread the disease to a great number of individuals of the same socio-economic status and this complicates even more the control of the disease. Thus, we could speculate that poor compliance in relation with the “AIDS epidemic” is the major cause of the recently reported increased incidence of tuberculosis [4].

Consequences of poor compliance in asthma

In recent years, it became apparent that compliance to treatment is a very important factor in the management of bronchial asthma. In table 2, possible consequences of poor compliance are listed. However, it is difficult to identify the poorly compliant patient. For example low theophylline serum level does not necessarily mean poor compliance as it could be due to poor absorption of the drug taken as prescribed. Therefore, there is a great deal of uncertainty as to whether the reported consequences really arise from poor compliance.

Table 2. - Consequences of poor compliance in bronchial asthma

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<tbody>
<tr>
<td>1. Treatment failure</td>
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<tr>
<td>a. Failure to become symptom free</td>
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<td>b. Failure to live a normal life</td>
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<td>c. Failure to participate in physical exercise</td>
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<tr>
<td>d. Prolonged and severe attacks</td>
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<tr>
<td>e. Increased emotional stress (personal-family)</td>
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<tr>
<td>f. Psychological imbalances</td>
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<tr>
<td>2. Missing days from work/school</td>
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<tr>
<td>3. Prolonged treatment</td>
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<tr>
<td>4. Increased expenses (personal/public)</td>
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<tr>
<td>5. Frequent visit to Emergency Departments</td>
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<tr>
<td>6. Drug toxicity</td>
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<td>7. Life threatening attacks</td>
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<td>8. Death</td>
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</table>

Recently, Horn et al. [5], in a community based prospective study reported that poor compliance with prescribed inhaled therapy is an important cause of persistent morbidity from asthma. The authors attributed the failure to control the disease in a quarter of their patients treated with inhaled steroids and beta agonists to be likely due to poor compliance. In a small number of adolescent asthma patients Chandler et al. [6] reported that non-compliant patients had more frequent emergency room visits, hospitalizations, life threatening attacks and more missing days from school. In another study, five deaths from asthma were investigated [7]. Serum theophylline levels measured at the time of the fatal episode were found to be subtherapeutic or zero in four cases even though appropriate amounts of theophylline had been prescribed. These authors concluded that poor compliance to treatment could be one of the significant factors that caused those fatal attacks.

In less severe asthma poor compliance frequently leads to treatment failure. In other words, a failure to reduce relapse rates and a failure to become symptom free and live a normal life, especially children that miss school and physical exercise. Furthermore, failure to control the attack and the prolongation of treatment could cause emotional stress, increased anxiety in the family and psychological imbalance in children and adolescent asthmatics.

Consequences of poor compliance in other chronic respiratory diseases

An even smaller number of studies investigated the results of poor compliance in chronic obstructive pulmonary diseases (COPD). In a study by James et al. [8], it was reported that asthma patients had a better compliance than those with chronic bronchitis and emphysema. They showed that the usual trend was the underuse of medications during acute exacerbations. Cinavosis et al. [9] showed that patients with chronic airways disease, recently discharged from hospital, overused inhaled salbutamol. They reported a high level of compliance attributed to the symptomatic nature of the illness, but it was not apparent if asthma patients were excluded from their study [9].

In the available literature, we did not find studies investigating the issue of consequences of poor compliance in cystic fibrosis, bronchiectasis, pulmonary fibrosis etc.

Summary and conclusions

In this short report, we reviewed the literature on the consequences of poor compliance in chronic respiratory diseases. Unquestionably, poor compliance is a very significant medical issue in the management of tuberculosis. Poor compliance could cause serious personal and public health problems and is probably the major obstacle to the elimination of tuberculosis. Similarly, important consequences have been attributed to poor compliance with prescribed treatment in bronchial asthma. Those consequences could vary from impairment of daily life to life threatening attacks and death. However, it is difficult to apply methods to produce solid evidence that such consequences are the result of poor compliance.

In conclusion a greater number of well designed studies are needed to investigate the various consequences of poor compliance in chronic respiratory diseases; a major issue that undoubtedly affects the outcome of treatment.
Can measurement of peak expiratory flow enhance compliance in chronic asthma?

I. Gregg*

The terms compliance and non-compliance are used to denote not only the taking of therapy in accordance with the prescribing doctor's directions with respect to its dosage, frequency and duration and, in the case of certain forms of treatment, observance of the correct technique for taking them, but also the carrying out of measures of a non-pharmacological kind that are an essential element of management.

Compliance in asthma, to a greater degree than in almost any other chronic disease, depends upon the quality of education that patients have received about its nature and the effects of therapy upon it. All too often, non-compliance in patients regarded as irresponsible or even stupid is a consequence of their having been given no explanation about the purpose or actions of the treatment that has been prescribed. For instance, many patients who take both an inhaled bronchodilator and an inhaled corticosteroid have no understanding about the differences between them. Similarly, it often emerges that those who use pressurised aerosols incorrectly have never been instructed in the correct technique for using these devices.

Compliance is generally considered to be a desirable feature of management, but this is not necessarily the case, at any rate in patients with asthma. In certain circumstances, for instance during acute exacerbations, rigid adherence to the directions given when treatment was prescribed may be inappropriate and even dangerous, and patients should, therefore, be encouraged to alter their maintenance regimen of drugs on their own initiative (provided, of course, that they have been instructed how they should do so). Strict compliance is also undesirable during remissions of asthma, whether natural or achieved by therapy, since this entails the taking of unnecessarily high doses of drugs and possible exposure to adverse effects.

The first part of this paper examines the contribution that measurement of peak expiratory flow (PEF) by doctors or patients themselves can make towards the promotion of compliance in chronic asthma. The second part considers various problems that arise when patients monitor their PEF for the purpose of self-management of their asthma.

Measurement of PEF as an aid to education and compliance

The Wright peak-flow meter was introduced in 1958, but many years were to pass before clinicians, especially general practitioners, recognised its value in the management of asthma. While there is now universal agreement that the measurement of PEF is mandatory in the management of asthma [1, 2], there is still insufficient appreciation of its value for educating patients about the nature of the disease and the purposes of their treatment and, hence, indirectly promoting compliance.

It is a simple matter in the course of a consultation to measure PEF before and after the inhalation of a bronchodilator aerosol in order to demonstrate its efficacy in relieving muscle constriction. However, much greater value is to be gained from consecutive measurements of PEF made over several days. Since the cost of the original Wright meter virtually restricted its use to the consulting-room, it was only with the introduction of

References


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