Assessment of a follow-up programme for institutionalised elderly patients on oral anticoagulant treatment


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Objective: To assess an interdisciplinary follow-up programme for institutionalised elderly people on oral anticoagulant treatment.

Method: The proposed follow-up treatment is of an interdisciplinary nature and includes INR, an interview with the patient and/or carer and an assessment of the treatment plan every week. The quality of drug treatment is assessed by the percentage of time and the percentage of measurements falling within the therapeutic range. The suitability of the programme in comparison to the traditional follow-up was studied in terms of the different proportions for the first variable and by analysing contingency tables for the second.

Results: Nine patients were recruited. Six patients (67%) showed a significant increase in the percentage of time they remained within the therapeutic range. 68.5% of INR measurements during the follow-up programme were within therapeutic range. The percentage of INR measurements below the therapeutic range was significantly reduced when compared to the traditional follow-up. Thirteen pharmaceutical interventions were documented per patient.

Conclusions: The complexity of oral anticoagulant treatment, the large number of interventions carried out together with elderly patients’ poor treatment compliance are evidence of the need to introduce follow-up programmes which include the professionals responsible for the patients’ care.

Key words: Oral anticoagulation. Elderly patients. Institutionalised. Follow-up programme. Acenocoumarol. INR.

INTRODUCTION

Oral anticoagulant treatment (OAT) in elderly patients, particularly institutionalised patients, is more difficult due to this population’s specific characteristics: greater
morbidity caused by chronic diseases, high use of drugs, drug interactions, pharmacokinetic/dynamic changes and high levels of dependency that make patient access to the haematology clinic difficult.

In the United States, and more recently in other countries, interdisciplinary models have been introduced, which include the participation of haematologists, clinical pharmacists and specialised nursing personnel, comparing their efficacy and safety with those of traditional models.

The study’s main aim is to assess the suitability of an interdisciplinary follow-up programme incorporating more intensive and closer clinical follow up for institutionalised patients.

**METHOD**

**Follow-up programme**

For the patients included in the study, the traditional OAT follow up was substituted, mainly by a follow up programme carried out by the haematology department of a hospital measuring INR’s approximately every four weeks. An interdisciplinary team was put together consisting of the pharmacy department pharmacists and nurse, a doctor and a nurse from each of the health and welfare centres included in the study, and a haematologist acting as the programme consultant.

The patients included were elderly patients being treated with acenocoumarol in health and welfare centres in La Cañada, Puerto de Sagunto and Chiva, included in the Health and welfare centre pharmaceutical care programme of the General directorate of social services of the autonomous region of Valencia.

INR was measured on a weekly basis using a portable CoaguChek S (Roche Diagnostics) coagulometer, interviewing the patient to assess compliance with the treatment and to identify possible drug-related problems arising during the previous week. After measuring INR and based on the information gathered during the consultation, a therapeutic and clinical assessment was carried out and a proposal for a therapeutic plan was agreed upon in conjunction with the doctor in charge. All changes to treatment were explained to the patient and/or carer to increase their involvement in the treatment. The criteria for consultation or referral to the haematology service were: significant clinical changes, unstable INR levels in spite of appropriate compliance and the appearance of a new diagnosis capable of affecting the main pathology for which anticoagulation treatment is indicated.

**Data analysis**

The variables used were the time patients remained within the therapeutic range. The variables were calculated for each patient both during the traditional follow-up period (information obtained from dosing sheets at the haematology clinic) and for the proposed follow-up period.

The recommended therapeutic range for each patient was that specified in the indications, with a possible deviation of 10%.

The extent of variation between the follow-up models with respect to the percentage of time patients remained within the therapeutic range was assessed by proportional difference and their 95% CI.

The percentage of INR measurements and the therapeutic range has been treated as a categorical variable (INR lower than therapeutic range, INR within therapeutic range and INR higher than therapeutic range). The association of this variable for the two models has been studied by analysing contingency tables. The extent of association of the model has been calculated using relative risk (RR) and a confidence interval of 95% (CI 95%) for each category.

The data were analysed using the SPSS version 9.0 (SPSS, INC., Chicago, Illinois) programme. A 95% (p < 0.05) confidence level was established.

**RESULTS**

Nine patients diagnosed with auricular fibrillation (AF; n = 7), valvulopathy (n = 1) and deep vein thrombosis (n = 1) were included. The patients with AF had an objective INR range of 2-3, while for the other two patients it was between 2.5-3.5. The average time period for which patients were included in the study was 266 ± 77 days.

The percentage of INR measurements within the therapeutic range was 62.03% for the traditional model and 68.54% for the respective follow-up programme. The percentages of measurements falling outside the range were 10.13 and 15.23% for measurements above the range and 27.85 and 16.23% for the measurements below the range, respectively.

Analysis of contingency tables of this variable showed a statistically significant association (Pearson Chi-square test = 6.087; df = 2; p = 0.04) with the follow-up models proposed. The results of the individual analysis of the different categories of the INR measurement percentage variable for the therapeutic range show that the traditional follow-up model multiplies by 1.72 (CI 95%; 1.11 to 2.66) the risk of obtaining INR results below the established therapeutic range. Regarding the risk of obtaining INR results within the therapeutic range or above this range, there are no statistically significant differences.

In six of the patients (67%) the percentage of time within the range increased significantly during the follow-up programme. Only two (22%) of patients showed significantly lower results than those obtained using the traditional follow-up method. In one patient there was no statistically significant difference between the two follow-up models.
The percentage of time within the therapeutic range for all of the patients during the traditional follow-up programme was 64.4% compared to 73.7% during the follow-up programme. These results indicate a significant increase of 9.3% (CI 95%). Patients were within therapeutic range 6.6 to 11.99% of the time.

The interventions carried out to improve anticoagulant treatment during the follow-up of the nine patients are summarised in Table I. In addition to the necessary adjustments made to the dose of acenocoumarol, we also highlight the detection and control of nine incidences of drug interactions (with amiodarone, paracetamol, macrolides), the detection and management of seven mild haemorrhagic events and the different action taken to involve patients in their treatment to improve drug compliance.

**Table I. Treatment interventions**

<table>
<thead>
<tr>
<th>Type of intervention</th>
<th>Intervention</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optimisation of treatment</td>
<td>Increase of dosage</td>
<td>22</td>
</tr>
<tr>
<td></td>
<td>Decrease of dosage</td>
<td>16</td>
</tr>
<tr>
<td></td>
<td>Change in administration times</td>
<td>4</td>
</tr>
<tr>
<td>Increase safety</td>
<td>Detection and management of interactions</td>
<td>9</td>
</tr>
<tr>
<td></td>
<td>Management of patient before surgery</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Treatment information for the healthcare team</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Monitoring of hepatic and/or thyroid function</td>
<td>11</td>
</tr>
<tr>
<td>Informing the patient</td>
<td>Diet habits</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Detection and management of light bleeding</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Co-administration of LMWH</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Information to the patient about indication and treatment</td>
<td>5</td>
</tr>
<tr>
<td>Fulfilment</td>
<td>Motivating the patient</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Patients being monitored</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(involvement of nursing staff)</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Detection of non-compliance</td>
<td>8</td>
</tr>
</tbody>
</table>

LMWH: low molecular weight heparin.

Mild haemorrhagic events were found in four patients. One case of conjunctival haemorrhage associated with increased blood pressure required transport to the emergency service of the referral hospital. The remaining haemorrhagic events were epistaxis (n = 5) and haematuria (n = 1), and were resolved by stopping the treatment for between one to two days.

No thromboembolic events were detected during the study period.

**DISCUSSION**

In spite of the evidence of a decreased number of thromboembolic events shown in the different clinical trials, oral anticoagulation treatment in elderly patients diagnosed with AF is clearly underused. There are factors that could explain this situation with regard to institutionalised patients: a negative risk/benefit assessment, the fewer number of problems associated with the alternative treatment with antiaggregant drugs and the difficulties experienced by patients in accessing anticoagulation units.

The intervention programme, in line with decentralisation proposals, carried out by scientific societies to improve patient access and with similar experiences in other countries, is organised around the professionals at the health and welfare centres attended by the patients and include haematology specialists at a hospital acting as programme consultants.

The percentage of INR measurements within the therapeutic range obtained during the follow-up programme proposed is comparable with the results obtained by other authors.

An analysis of the relationship between the proposed follow-up model and the percentage of measurements with respect to the therapeutic range shows a statistically significant association. The individual study of each category makes it clear that this association is due mainly to the fact that during the follow-up programme, the percentage of INR measurements under the therapeutic range was significantly lower than during the traditional follow-up (16.23 compared to 27.85%; Chi squared: 5.57; p = 0.02). In our opinion, this difference is mainly due to the fact that the follow-up programme makes it possible to monitor the patient and healthcare team more closely and the patient becomes more involved in the treatment and, consequently, complies better.

The results obtained in terms of percentage times within the therapeutic range in the follow-up programme are comparable with those obtained by other authors, both in self-controlled studies and in studies followed up by clinical units.

The follow up continued to show a high level of variability in OAT response in institutionalised elderly patients, mainly due to poor treatment compliance and the frequent occurrence of unstable situations in the patients. Therefore, in spite of OAT being chronic, it is necessary to assess each patient’s risk/benefit ratio more frequently.

The incidence of clinical complications associated with the OAT during the follow-up programme can be considered as reduced and in line with those detected by other authors.

Situations of instability in INR due to drug interactions, especially with amiodarone, or poor patient compliance, were easier to control because the programme developed made it possible to measure INR at the appropriate moment and at the actual centre, which implies a shorter time during which the INR is outside the therapeutic interval.

The high number of interventions per patient during the follow-up programme and the clinical importance of many of these, such as managing interactions, together with the low level of compliance detected in these patients, demonstrate the clear need for patients on anticoagulation treatment to be cared for closely and by an interdisciplinary team.
References