Changes in the Clinical Profile of Patients Treated with Oral Anticoagulants During the Decade of the Ninety


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**Introduction.** During the last few years the efficacy of oral anticoagulant treatment in the prevention of thromboembolic complications among patients with cardiac diseases has been well established. This has determined an increase in the number of patients undergoing this therapy and a change in the clinical profile of these patients.

**Objective.** To determine the number and the changes in the clinical characteristics of patients treated with oral anticoagulants during the last decade.

**Patients and method.** The charts of 5,771 hospitalized patients between January 1, 1991 and December 31, 1999, were retrospectively reviewed. We analyzed the number of patients discharged with anticoagulant treatment, the clinical profile and the evolution during the decade.

**Results.** 761 (13.1%) patients were discharged with anticoagulants. The therapy was prescribed to 7.4% of the patients from 1991-1993 and to 15.1% of the patients from 1998-1999. The mean age of the patients was 60.4 from 1991-1993 and 67.1 from 1998-1999 (p < 0.001). At the beginning of the decade, 90% of the patients had prosthetic valves, suffered from rheumatic heart disease or had had thromboembolic phenomena previously. At the end of the decade, only 49% could be included in these groups.

**Conclusions.** a) The use of oral anticoagulants among our hospitalized patients has been duplicated during the past ten years; b) the clinical profile has changed, patients are now older and with different morbidity; c) the rheumatic heart disease and the prosthetic valves are no longer the predominant indications, and d) the use of therapy as secondary prevention has decreased significantly.

**Key words:** Anticoagulants. Population. Atrial fibrillation.

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**INTRODUCTION**

Coumarins have been used as oral anticoagulant agents for more than half a century. Their proven effectiveness in the prevention of thromboembolism (TE) has firmly associated these drugs with the treat-
ment of certain cardiological diseases. However, anticoagulant treatment carries an evident risk of bleeding, produces numerous drug interactions, and requires costly and complex control that makes patients receiving oral anticoagulants a special group for all healthcare professionals involved in their care. This treatment subjects patients and, occasionally, their families to special restrictions.

Nonetheless, not only have no alternatives been developed for prolonged anticoagulation, but in recent years the number of indications have increased. This, together with the simplification of treatment follow-up, improved transport and communication, and the increased capacity of patients to correctly manage their treatment has lead to a significant increment in the number of patients being treated with oral anticoagulants. The population now treated with oral anticoagulants include patients who only a few years ago were thought to present contraindications to anticoagulant treatment. Previous TE was defined as cerebrovascular accidents, transitory cerebral ischemic episodes, and peripheral embolism. The diagnosis of DM or AHT required that the patient be receiving specific pharmacological treatment for these diseases. The diagnosis of CHF was based on the mention in a hospital discharge report of the presence of this condition.

The evolution of the patients’ clinical profiles was evaluated by comparing the first 3 years of the decade (1991-1993) with two-year intervals for the rest of the study period targeted. The absolute number of hospital discharge reports analyzed in each period were 1093 in 1991-1993; 1591 in 1994-1995; 1053 in 1996-1997; and 2034 in 1998-1999. Since admissions rather than patients were studied, all admission of patients who had been hospitalized more than once were counted.

**Statistical analysis**

Quantitative variables were expressed as means ± 1 standard deviation. Qualitative variables were expressed as percentages and confidence intervals were calculated. The Student t test was used to compare unpaired quantitative variables and the χ² test for qualitative variables. A value of P < .05 was considered statistically significant for hypothesis testing.

**RESULTS**

A total of 761 of the 5771 admissions analyzed (13.1%) were patients discharged with anticoagulant treatment with coumarin drugs. These admissions corresponded to 563 patients and 198 readmissions. The clinical characteristics of the entire group of patients treated with oral anticoagulants are summarized in Table 1. Anticoagulants were prescribed to 7.4% of the patients hospitalized in 1991-1993, and to 15.1% of the patients hospitalized in 1998-1999. The evolution over the decade of the proportion of patients treated with oral anticoagulants and the evolution of the proportion of patients with AF is shown in Figure 1.

The mean age of patients treated with oral anticoagulants was 60.4 ± 9.2 years in 1991-1993 and 67.1 ± 10.5 years in 1998-1999 (P < .001). The percentage of

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**ABBREVIATIONS**

RCV: rheumatic cardiac valve disease  
DM: diabetes mellitus  
AF: atrial fibrillation  
NRAF: non-rheumatic atrial fibrillation  
AHT: arterial hypertension  
CHF: congestive heart failure  
TE: thromboembolism

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**PATIENTS AND METHOD**

We reviewed hospital discharge reports and sometimes the full medical records of 5771 patients admitted to the cardiology department between 1 January 1991 and 31 December 1999. We determined how many patients were discharged with oral anticoagulant treatment with coumarin derivatives, regardless of whether this treatment had been prescribed before admission or during admission. We analyzed the clinical profile of patients treated with anticoagulants considering the variables of age, sex, presence of atrial fibrillation (AF), previous TE, prosthetic cardiac valves, rheumatic cardiac valve disease (RCV), diabetes mellitus (DM), arterial hypertension (AHT), and congestive heart failure (CHF). The patient was considered to have AF if the arrhythmia was permanent or appeared in prolonged, repeated episodes that categorized the patient in the group of chronic, recurrent, persistent AF and was determinant in establishing the indication for anticoagulant treatment. Previous TE was defined as cerebrovascular accidents, transitory cerebral ischemic episodes, and peripheral embolism. The diagnosis of DM or AHT required that the patient receive specific pharmacological treatment for these diseases. The diagnosis of CHF was based on the mention in a hospital discharge report of the presence of this condition.
patients over 75 years undergoing anticoagulant treatment was 1% at the beginning of the decade and 19% at the end (P < .001). In contrast, the proportion of patients under 60 years decreased from 41% to 20% in the same period (P < .001). The evolution of the age of the patients treated with oral anticoagulants throughout the study period is shown in Table 2.

As can be seen in Table 3, of the factors analyzed presence of DM and CHF, and gender distribution did not differ significantly between the early and late 1990s. AF and AHT were present in a larger percentage of patients in the late 1990s. However, rheumatic heart valve disease, carrying a cardiac valve prosthesis, or previous embolic episodes were circumstances that significantly decreased in frequency between 1991-1993 and 1998-1999 and this change conditioned the clinical profile of the patient population receiving oral anticoagulants.

Upon analyzing the presence of a cardiac valve prosthesis or the diagnosis of RCV, it was apparent that one or the other of them was present in almost 80% of patients treated with oral anticoagulants in 1991-1993, but in only 44% of the patients treated in 1998-1999. If we were to add previous embolic episodes to the analysis, almost all of the patients treated with oral anticoagulants in the early 1990s belonged to one of these three categories, compared with only half of the patients in the late 1990s (Table 4).

**DISCUSSION**

In our series, the use of anticoagulant treatment in hospitalized patients increased two-fold in the decade of the 1990s, from 7.4% in the early 1990s to 15.1% in the late 1990s. The clinical profile of patients under-
going this type of therapy has changed significantly, now including older patients with different conditions. At present, the mean age of patients treated with anticoagulants is 67 years, and patients over 75 constitute one fifth of the entire patient population treated with anticoagulants. Oral anticoagulant treatment of patients over 75 was exceptional less than 10 years ago. Although it is still debated whether the elderly are at greater risk of bleeding,7,9 the more advanced age of patients treated with oral anticoagulants is due to the increased use of this therapy in the large group of patients with non-rheumatic atrial fibrillation (NRAF). This disease occurs predominantly in the elderly10-13 and the benefits of anticoagulation in preventing thromboembolic complications have been firmly established in recent years.14-19 Half of the patients with AF admitted to our center in 1998-1999 were discharged with oral anticoagulant treatment, although this group also includes patients with rheumatic heart valve disease.

The change in the clinical profile of patients treated with oral anticoagulants reflects not only in a rise in their average age, but also the finding that prosthetic cardiac valves or rheumatic heart valve disease have ceased to be the predominant conditions. In the early 1990s, 4 out of 5 patients treated with oral anticoagulants had one of these two clinical conditions. At the end of the study period, less than half of the patients could be included in this group. The use of anticoagulant treatment as a secondary prevention measure decreased significantly, from 21% in the early 1990s to 8% in the late 1990s. The usefulness of anticoagulants in preventing thromboembolism in the many patients who have NRAF has been widely documented in recent years14-19, and has made different types of specialists aware of the problem of primary prevention of stroke.5,6,20-24 Consequently, the use of oral anticoagulant treatment in this large and growing population group has increased, although probably less than would be considered optimal.25-28 When we analyzed the presence of cardiac valve disease, previous embolism, or prosthetic cardiac valves together, almost the entire population of patients receiving anticoagulant treatment in the early 1990s belonged to one of these categories, compared with only half of the population at the end of the decade.

The results of the present study have several implications, in our opinion. In first place, the complexity and cost of anticoagulant treatment requires that resource allocation be adapted and anticoagulation strategies planned. These strategies must include dissemination among all healthcare sectors involved in the control of these patients specific information about the care that patients receiving oral anticoagulants require with respect to the important area of drug interactions, as well as precautions in the case of tooth extraction, minor surgery, etc., should be emphasized. It is evident that a greater level of coordination between specialists (fundamentally hematologists and cardiologists) and primary care physicians is needed.29,30 The use of capillary blood tests, which are being found to be reliable, can do much to avoid discomfort for patients and enable primary care centers to supervise their care, thus eliminating the need for travel to specialized centers. In selected groups, self-control is feasible.31-33 This contributes not only to improving the effectiveness of the follow-up of patients receiving oral anticoagulants, but also favors the use of more accurate evidence-based prescription practices. This avoids the need for establishing unnecessary contraindications based on hypothetical bleeding risk in nonclinical situations that actually have more to do with the difficulty of strict follow-up.

Aside from these implications, another aspect of our study results should be discussed. Anticoagulant therapy is, without doubt, the pharmacological treatment that requires the most exhaustive risk-benefit assessment before prescription. The risk is conditioned by the possibility of bleeding complications. However, when determining these complications and making extrapolations from the available information, we find that this information refers to a population that is not the same as the current population of patients receiving anticoagulants.34,35 In a study made in our center in the mid-1990s and recently published,36 we established the risk of bleeding in the local population of patients currently undergoing anticoagulant therapy. However, when the population included in this study was compared with the population actually receiving oral anticoagulants, we observed appreciable differences in age and comorbidity. These differences meant that this information was not strictly applicable to determining the risk of hemorrhage in the current patient population, despite the short time period that has elapsed.

Finally, we must note that the situation described has not yet stabilized and will continue to change in coming years. The aging of the population, optimization of the use of anticoagulation in patients with NRAF, ease of treatment management, and even the possibility of including groups of patients with a high risk of thromboembolism have been documented.37 In this last group of patients anticoagulation has been contraindicated until now.38 These factors will condition for some time the growing frequency of treatment with oral anticoagulants. The development of alternative drugs to the coumarins is in the preliminary stages and cannot be expected produce any substantial changes in prescription practices soon. Therefore, for the next few years physicians will still have to deal with a situation that has considerable social and health dimensions.
Study limitations

This information was obtained fundamentally from the database of our cardiology unit. This means that the number of patients analyzed was significantly lower in the early years of analysis because less information was available. However, we believe that the large number of patients analyzed in the period for which less information was available (1093) minimizes the effects of this limitation.

The study was based on admissions rather than on patients. This method, which has been used in other studies that have analyzed similar questions, makes it possible to determine the real needs for treatment follow-up. However, this is a limitation for estimating the percentage of the population receiving oral anticoagulant treatment. The fact that we had previously studied this topic 20 helped us to accept this limitation. Finally, all the patients were admitted to the cardiology unit and received anticoagulant treatment for thromboembolic heart disease. Consequently, we have not analyzed patients treated with oral anticoagulants for other reasons or admitted to other departments.

CONCLUSIONS

The use of anticoagulant treatment with coumarin for the prevention of thromboembolism increased twofold in the 1990s among the patients hospitalized in our cardiology unit. The clinical profile of patients receiving oral anticoagulant treatment changed significantly in this decade and now corresponds to that of older patients being treated for different diseases. Rheumatic heart disease, prosthetic cardiac valves, and secondary prevention are no longer the predominant indications.

REFERENCES