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Prevention of Recurrent Systemic Embolism with Anticoagulants in Patients with Rheumatic Heart Disease

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Results are reported of long-term anticoagulant treatment in a group of 90 patients with rheumatic heart disease who had systemic embolism. Compared to the reported incidence of recurrent systemic embolism in patients not given anticoagulant drugs, such therapy remarkably lowers the risk of such occurrences. Complications from this treatment in the reported patients were minimal.

Systemic embolism occurs frequently in patients with rheumatic heart disease.[1] In addition, the risk of recurrent embolism is greater than for the first episode.[2] The incidence of such recurrence has been reported in various series as 19.5%,[3] 35%,[4] and 65%.[5]

The rate of repeated embolism is high during the 12 months following the first embolism.[2, 3, 5] In one series[3] of 1,017 patients, who were not given anticoagulants and were observed over a 20-year period, the recurrence rate was 9.6% per patient year.

We undertook the present study to evaluate the effectiveness of long-term oral anticoagulant therapy in preventing repeated systemic embolism in patients with rheumatic valvular disease.

Material

This experience consisted of 90 patients with rheumatic heart disease, each of whom had a definite history of one or more episodes of previous systemic embolism. None of this group had prosthetic valve replacement. There were 67 females and 23 males. The age group and diagnosis are shown in Tables I and II. Eighty-two patients had atrial fibrillation and eight were in sinus rhythm at the time of their first embolism.

Clinical Observations

Systemic embolism occurred 122 times before anticoagulant therapy was instituted in this group of patients. The sites of embolism are shown in Table III. Thirteen patients had their first embolism after mitral valvulotomy, three of them in the immediate postoperative period. Of 51 patients who had cardiac catheterization after first embolism, 11 had normal hemodynamic findings. In 34, cineangiograms of the left atrium, carried out at the time of cardiac catheterization in 34 patients, showed a definite filling defect suggesting left atrial thrombus in two patients, and suspected in one.

Of 36 patients who had either closed or open mitral valvulotomy, left

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TABLE I

AGE OF THE PATIENTS AT THE TIME OF FIRST EMBOLISM

Age Group	Number of Patients
23-29	3
30-39	10
40-49	28
50-59	37
60 and above	12

(range 23-74)

TABLE II

NATURE OF VALVULAR LESION

Valvular Lesion	Number of Patients
Mitral Stenosis only	43
Mitral Stenosis and Regurgitation	44
Mitral Regurgitation only	2
Aortic Stenosis only	1

atrial thrombus was found in eight patients.

Twenty-one individuals died before completion of this study. The cause of death is shown in Table IV. Anticoagulants had been discontinued in the three patients who died of recurrent systemic embolism.

Anticoagulant Therapy

Treatment with either warfarin or dicumarol was started in all of these patients immediately upon hospitalization following systemic embolism. Dose of the drug was adjusted to keep the patients' prothrombin time (Quick one-stage) between 1.6-2 times the control level. Prothrombin times in out-patients were measured every three to four weeks during the follow-up period as described previously.[6] The duration of treatment in this group ranged between 3-172 months, with an average of 40.5 months.

During the study period, anticoagulant therapy was discontinued in 12 patients for reasons listed in Table V.

Those who developed recurrent embolism while receiving therapy were immediately hospitalized and prothrombin time was checked at the time of admission to see if it was in the therapeutic range (1.6-2.0 times control).

Results

Six subjects suffered recurrent systemic embolism while receiving oral anticoagulant therapy. The average duration of treatment in this group was 27 months (a recurrence rate of 1.5% per patient year). Only one of these six had prothrombin time (Quick one-stage) in the therapeutic range at the time of recurrence. Considering this fact, the recurrence rate is 0.25% per patient year in those patients given adequate doses of anticoagulants.

Complications

Major complications of anticoagulant therapy occurred in seven patients (Table VI). Such complications are defined as hemorrhage requiring hospital admission and/or cessation of anticoagulant treatment. Anticoagulants had been discontinued in two of these six. There was no mortality because of bleeding.

Discussion

These data suggest that adequate oral anticoagulant therapy is effective in reducing the risk of recurrent systemic embolism in patients with rheumatic heart disease. Similar results have been obtained by other workers in smaller groups of patients[4, 7-9] since Wright and Foley introduced this treatment in 1947.[10] Clearly, absolute proof of the value of such therapy would be provided only if a prospective, controlled, randomized study was made of untreated and treated groups. In our view such an investigation is unacceptable for ethical reasons.

The protective value of mitral valvulotomy against systemic embolism is still debatable. There are reports of high incidence of embolism after mitral valvulotomy[11, 12] yet others indicate lowered recurrence rates after surgery.[13, 14] The risk of postoperative embolism is found to be minimal in long term follow-up, if anticoagulants are given.[15] Thus, although anticoagulant therapy should be the treatment of choice in nonoperated or nonoperable patients, it should also be considered for use after surgery in order to give added protection against recurrent systemic embolism.

TABLE III

SITE OF SYSTEMIC EMBOLISM BEFORE ANTICOAGULANT THERAPY

Site of Embolism	Number of Patients
Cerebral	68
Peripheral	42
Visceral	12

TABLE IV

CAUSE OF DEATH DURING THE PERIOD OF STUDY

Cause of Death	Number of Patients
Complications of Surgery	7
Congestive Heart Failure	4
Found "dead" in bed (no autopsy)	5
Recurrent Systemic Embolism	3
Bronchogenic Carcinoma	1
Auto-accident	1

TABLE V

REASONS FOR THE DISCONTINUATION OF TREATMENT AND ITS OUTCOME

Number of Patients	Reason for Stopping Treatment	Recurrence	Follow-up Period (months)
6	Post operative	0	12-50
2	Hemorrhage	2 (both died)	3-22
3	Unknown	3	2, 31, 48
1	Post Cardioversion	0 (in Sinus Rhythm)	15

TABLE VI

COMPLICATIONS OF TREATMENT

Complication	No. of Patients
Cerebral Hematoma (Needed Surgical Drainage)	1
Mile Upper GI Bleeding	2
Menorrhagia	2
Bleeding from Hemorrhoids	2

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