Effects of policosanol in the functional recovery of non-cardioembolic ischemic stroke hypertensive patients

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Introduction. Clinical studies results show that policosanol (20 mg/day) + aspirin therapy had benefits versus placebo + aspirin to patients with recent non-cardioembolic ischemic stroke.

Aim. To analyze the policosanol treatment effects in the hypertensive patients included in two non-cardioembolic ischemic stroke recovery trials.

Patients and methods. Hypertensive patients with a modified Rankin Scale (mRS) score 2 to 4 were randomized, within 30 days of onset, to policosanol + aspirin or placebo + aspirin, for six months. The primary outcome was mRS score reduction.

Results. One hundred forty two hypertensive patients (mean age: 66 years) were included in the analysis. Policosanol + aspirin decreased significantly the mRS score mean from the first interim check-up. The policosanol treatment effect did not wear off, on the contrary, even improved after six months therapy. More over, policosanol + aspirin (80.3%) treatment achieved significant results (mRS ≤ 1), whereas the placebo + aspirin did not (8.5%). Two patients discontinued and four (two from each group) referred mild adverse events.

Conclusions. The treatment for six months with policosanol + aspirin in hypertensive patients who had suffered a non-cardioembolic ischemic stroke proved to be more effective than the placebo + aspirin treatment in the functional recovery of these patients.

Key words. Aspirin. Hypertension. Non-cardioembolic ischemic stroke. Policosanol. Recovery.

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Introduction

Stroke results from the sudden interruption of blood flow to a brain region that impairs the energy supply to the central nervous system. Most strokes (75-80% of cases) are ischemic on nature [1]. Hypoxia is the main cause of central nervous system damage in stroke. Although neurons and glial cells are both affected in the penumbra, neurons are more vulnerable because they depend on the oxidative metabolism of glucose for energy [2].

Non-cardioembolic ischemic stroke remains as a leading cause of mortality, and is the main cause of disability worldwide. About half of stroke survivors remain with physical or cognitive impairment that severely affect their physical and social functions. Also, stroke implies a high cost to patients, families and health systems [3-5]. Control of modifiable stroke risk factors, such as hypertension, diabetes, dyslipidemia, cigarette smoking and obesity are key measures to prevent recurrent strokes [6].

Up to date, aspirin (AS) remains the gold standard of antiplatelet therapy for stroke recovery and prevention, and several studies and meta-analyses support the merits of antiplatelet drugs in stroke prevention by lowering platelet function, which reduces thrombotic complications of atherosclerosis [7-10].

Reduction of low-density lipoprotein-cholesterol (LDL-C) levels has been shown to be relevant not only for stroke prevention [11,12], but also for improving functional outcomes after stroke, a key matter for reducing the disability after stroke [13-15].

Policosanol, a mixture of 8 high molecular weight sugarcane wax alcohols, has been shown protective effects in experimental brain ischemia [16-18], and clinical studies have found coherent results [19-24]. Two double-blind, placebo-controlled studies demonstrated that policosanol (20 mg/day) + AS (125 mg/day) given for 6 months improved the neurological recovery as compared to placebo + AS in patients with recent (≤ 30 days) non-cardioembolic ischemic stroke [19,20]. Also, a shorter duration (3 months) study demonstrated that policosanol, was as effective as atorvastatin (20 mg/day), for improving the functional outcome in stroke patients treated with AS [21]. Likewise, open long-term (5 years) studies found that policosanol added to

AS was associated to a very good neurological recovery among sufferers of non-cardioembolic ischemic stroke [22,23]. Long-term (12 months) administration of policosanol + AS given after suffering non-cardioembolic ischemic stroke were shown to be better than placebo + AS in improving functional outcomes at 3 and 12 months when used among patients with non-cardioembolic ischemic stroke of moderate severity [24].

In light of these facts, this analysis was undertaken to verify whether policosanol added to AS within 30 days of stroke onset, is better than placebo + AS for the six months recovery of non-cardioembolic ischemic stroke in the case of the hypertensive patients included.

Patients and methods

The present analysis includes the data of all hypertensive patients included in two non-cardioembolic ischemic stroke recovery studies.

Study design

Hypertensive patients who suffered recent non-cardioembolic ischemic stroke (≤ 30 days before recruitment) and gave their informed written consent enrolled at external visits of the Institute of Neurology and Neurosurgery (Havana, Cuba). The independent Ethics Committee approved the study protocol and the studies were register in the Cuban Public Registry of Clinical Studies.

All participants underwent clinical history and full clinical examination. All the patients included in the study were indicated and received rehabilitation in their Polyclinics of residence and were recommended to follow a healthy lifestyle, with control of blood pressure, smoking cessation, low fat and calorie diet, physical activity systematic and eliminate alcohol consumption.

Eligible hypertensive patients were randomized to policosanol+ AS or placebo + AS for 6 months and attended to control visits at 1.5, 3, 4.5 and 6 months on treatment. Patients underwent general examination and neurological assessment at each visit, laboratory analyses at baseline and at 3 and 6 months on therapy, meanwhile we controlled treatment compliance and adverse events (AE) at each visit post randomization.

Study patients

Enrolled hypertensive patients were ambulatory men and women over 40 years of age who had non-cardioembolic ischemic stroke (diagnosed by a neurologist) within the 30 days prior to enrolment.

The study protocol defined stroke as the occurrence of focal clinical signs of central nervous system dysfunction of vascular origin that lasted for at least 24 hours. Non-cardioembolic ischemic stroke confirmed through clinical assessment and computerized axial tomography performed within the following 48 hours after stroke onset in hypertensive patients were eligible for randomization if they had a modified Rankin Scale (mRS) score of 2, 3 or 4 [25]. The exclusion criteria included suspected or confirmed haemorrhagic stroke, atrial fibrillation, other cardiac sources of embolism, subarachnoid haemorrhage, diastolic hypertension ≥ 110 mmHg, cardiac valve diseases, history of myocardial infarction, instable angina or revacularisation surgery within the 6 months prior to the trial and previous consumption of policosanol.

Treatment

Patients consumed policosanol + AS or placebo + AS once daily with the breakfast for 6 months. Keeping in mind that randomised controlled trials support the use of daily doses of AS (75-150 mg) for the prevention of vascular events in high-risk patients we used 125 mg/day [7-10].

Good treatment compliance, assessed through counts of remainder tablets and patient's interviews, was to consume at least 85% of the scheduled tablets per period. Antiplatelet or lipid-lowering drugs were not permit to use during the study.

No patients included in the study received rechannel treatment neither with rTPa nor with mechanical thrombectomy.

Study outcomes

Clinical response was defined in terms of stroke functional scale (mRS), which measure patient disability [25,26].

The primary outcome of this study was functional outcome measured by the mRS, which assesses the outcome with scores that range from 0 to 6 (0 no symptoms; 1 no relevant disability despite symptoms, able to conduct all usual activities; 2 slight disability, unable to carry out all previous activities but able to conduct self-assistance; 3 moderate disability requiring some help, but able to walk without assistance; 4 moderate severe disability, unable to walk without assistance, and unable to attend body needs without assistance; 5 serious disability; bed-

ridden, incontinent, and requiring constant care and attention; and 6 death) [26].

We assumed to obtain a higher rate of cases with a favourable stroke outcome (mRS ≤ 1) than in the placebo + AS group. In addition, reduction of mean mRS with policosanol + AS should be greater than with placebo + AS. To obtain mRS ≤ 1 are considered as favourable post stroke outcomes [15].

The mRS was always applied and evaluated by the principal investigator. All the patients included in the study had a mRS before the non-cardioembolic ischemic stroke of 0.

Decreases on LDL-C, total cholesterol (TC) and increases on HDL-C levels were secondary outcomes.

Laboratory analyses

Venous blood samples were taken following a fasting of 12 hours. Plasma was separated from red blood cells by centrifugation at 4 °C and 2000 × *g* for 10 min, and aliquots were immediately taken. Lab analyses were performed within the next 8 hours after blood drawing.

Lipid profile and blood safety indicators

Serum lipids levels as well as blood biochemistry –alanine amino transferase (ALT), aspartate amino transferase (AST), glucose and creatinine– indicators were determined using reagent kits (Roche, Basel, Switzerland) in a Hitachi 719 autoanalyzer (Tokyo, Japan) of the Clinical Laboratory of the Medical Surgical Research Centre.

Safety and tolerability assessment

Safety and tolerability indicators included laboratory and physical examination data, and AE reports. Study protocol defined an AE as any undesirable experience, absent at hospital discharge or worsened thereafter, happening in a patient, independently if it could be or not related with the therapy. AE were classified as mild, moderate or serious according to their intensity. Mild AE should not require stopping of study medications or specific treatment of the AE, moderate AE should require the withdrawal of study medications and/or treatment of the AE, while serious AE should lead to patient hospitalization and/or to death.

Statistical analysis

The study was designed to have a statistical power of 80% to detect a reduction of 30% in the frequency of policosanol + AS cases with a favourable outcome as compared to the placebo + AS group, with a two-sided significance level of $p < 0.05$. We analyzed the data on an intention-to-treat basis, including those of all patients who underwent randomization. Continuous values were compared with the *t* test for paired (within group comparisons) and independent (between group comparisons) samples, and the Bonferroni's test was used to adjust significances from repeat comparisons [27]. Categorical data were compared with the Fisher exact probability test. All *p* values were two-sided.

Results

Population characteristics

One hundred forty two hypertensive patients enrolled (mean age: 66 years; 73 men, 69 women) were eligible for randomization and 140 completed the study. Two patients discontinued prematurely the trial, because of travels abroad (one patient from policosanol + AS group) and unwillingness to follow-up (one patient from placebo + AS group).

Baseline characteristics were well balanced in the two groups (Table I). The most frequent (≥ 20%) risk factors at baseline besides hypertension were overweight + obesity (61.3%), smoking (45.9%), hypercholesterolemia (21.8%) and diabetes (13.4%). Concomitant therapy was also well matched in both groups, the most frequent being the angiotensin converting enzyme inhibitors (ACEI) (83.9%).

Effects on stroke functional outcomes

Table II shows the distribution of patients into different mRS values at baseline, and after 3 and 6 months on treatment. Baseline values were similar in both groups. In all comparisons more patients treated with policosanol + AS than with placebo + AS achieved mRS ≤ 1. At the end of the study more policosanol + AS ($n = 57$; 80.3%) than placebo + AS patients ($n = 6$; 8.5%) achieved mRS goals ($p < 0.001$).

Table III lists the effects on functional stroke scale. Treatment with policosanol + AS decreased mean mRS significantly from the first interim checkup ($p < 0.0001$ vs placebo + AS). The treatment effect did not wear off, even improved, after six months therapy ($p < 0.0001$ vs placebo + AS) when the net decrease versus placebo + AS was 56%.

Table I. Baseline characteristics of study population.

		Policosanol + AS (*n* = 71)		Placebo + AS (*n* = 71)		Total (*n* = 142)	
		n	%	*n*	%	*n*	%
Age (years) [a]		66 ± 11		65 ± 11		66 ± 11	
Body mass index (kg/m^2) [a]		26.1 ± 2.2		26.5 ± 2.8		26.3 ± 2.5	
mRS score [a]		2.9 ± 0.5		2.7 ± 0.5		2.8 ± 0.5	
Sex	Women	34	47.9	35	49.3	69	48.6
	Men	37	52.1	36	58.7	73	51.4
Personal history	Hypertension	71	100	71	100	142	100
	Overweight + obesity	45	63.4	42	59.1	87	61.3
	Smoking	33	46.5	31	43.7	64	45.9
	Hypercholesterolemia	14	19.7	17	23.9	31	21.8
	Diabetes mellitus	9	12.7	10	14.9	19	13.4
	Coronary disease	6	8.5	8	11.3	14	9.9
Family history	Coronary disease	51	71.8	53	74.6	104	73.2
	Stroke	20	28.2	22	31.0	42	29.6
Concomitant therapy	At least one concomitant therapy	71	100	71	100	142	100
	ACEI	60	84.6	58	81.7	118	83.9
	Diuretics	11	15.5	13	18.4	24	17.0
	Oral hypoglycaemic drugs	9	12.7	9	12.7	18	12.7

All comparisons were not significant. ACEI: angiotensin converting enzyme inhibitors; AS: aspirin; mRS: modified Ranking Scale. [a] Mean ± standard deviation.

Effects on lipid profile

All lipid variables were similar at randomization. No significant changes occurred in the placebo + AS group. Policosanol + AS decreased persistently and significantly LDL-C, final reduction was 31.2% ($p < 0.01$ vs baseline, vs placebo + AS), and the same happened with TC, final decrease was 12% ($p < 0.05$ vs baseline, vs placebo + AS). In turn, the treatment increased HDL-C by 5.7% ($p < 0.05$) vs baseline, vs placebo + AS) (Table IV). Policosanol + AS failed to modify triglycerides.

Effects on blood arterial pressure

Systolic and diastolic blood arterial pressures significantly decrease in the policosanol + AS group as compare with placebo + AS throughout study (Table V).

Safety and tolerability

According to the effects on physical and blood safety indicators (ALT, AST, glucose and creatinine), treatments were safe and well tolerated (data not shown for simplicity), but individual values were within normal limits. The treatment did not modify any other physical or blood safety indicator versus placebo + AS.

Two patients (one placebo + AS, one policosanol + AS) were dropouts. In addition, two policosanol + AS subjects experienced insomnia, while two other placebo + AS patients referred to have heartburn episodes and gastritis, respectively.

Discussion

The aim of the present study was to investigate six months administration of policosanol (20 mg/day) added to conventional AS therapy was able to provide sustained and relevant benefits over placebo + AS on the functional outcome of hypertensive patients who suffered a recent non-cardioembolic ischemic stroke of moderate severity.

Study patients were randomized within 30 days of the onset of the non-cardioembolic ischemic stroke, so that the effects of policosanol + AS cannot be interpreted as effects on the acute stroke, but on the further recovery step. Following the recommendations for non-cardioembolic ischemic stroke management, all patients received AS early on their admission in stroke unit and followed on the thereafter [7-9]. Our study group was restricted to have 2 to 4 mRS values for lowering the influence of variable stroke severity on the results. Study patients had not been received policosanol before being randomized, so that they were technically virgin to study treatment.

The strength of the study includes that it was randomized, double-blinded and placebo-controlled, with all patients receiving AS, first-line therapy recommended after non-cardioembolic ischemic stroke. Since both groups were homogeneous at baseline the effects here found can be attributable to policosanol + AS therapy. In particular, the mean mRS values were comparable in the two groups. Also,

the fact that treatment compliance was very good (≥ 85%) and comparable in both groups supports the validity of the present results.

Baseline characteristics of study patients match well with stroke epidemiological data. The mean age of patients, and the high frequency of concomitant morbidities were consistent with common stroke risk factors. In addition to AS, consumed by all patients, the most frequent concomitant drugs were ACEI, but such consumption, coherent with the prevalence of hypertension, was also similar in the two groups, so that we discard the potential influence of concomitant therapy to the present results.

We assessed the effects on stroke outcome by measuring the functional status and degree of functional dependence of the patients with the mRS, scales used widely to assess post-stroke functional impairment. In particular, mRS is the clinical outcome tool most widely used for stroke recovery in clinical studies [25,26,28-31].

The present results confirms that the addition of policosanol to conventional AS therapy after hospital discharge should help the neurological recovery post-non-cardioembolic ischemic stroke. This concept is supported by the proportion of policosanol + AS patients who achieved a good stroke outcome (mRS ≤ 1: 80.3%) at study completion and the mean reduction (56% vs placebo + AS) of mRS, the primary study outcome, as compared to placebo + AS. These results are consistent with the efficacy of policosanol + AS demonstrated in previous randomized, double-blind controlled studies in which the control group received placebo + AS and the net decrease of the mean mRS here seen at month 3 agrees with those found in previous placebo controlled studies [19,20].

Also, keeping in mind the neurological improvement at 12 weeks after stroke in the NINDS rt-PA study (11-13% reduction of mRS) despite the patients were treated as soon as within the first hours of acute stroke [30], we should consider that the results achieved with policosanol + AS were clinically meaningful.

In addition, policosanol + AS reduced significantly LDL-C (31.2%) and TC (12%), and increased HDL-C (5.7%). Although some trials have failed to find lipid lowering effects of other policosanol tablets, the lipid-modifying effects here seen are coherent with previous data in post-stroke patients [19-24], and with the general lipid-lowering profile of policosanol [32-38].

The mechanism(s) whereby policosanol may help to improve stroke recovery are beyond the objective of this study. Nevertheless, antiplatelet effects of policosanol [39-42] should be responsible, at least partly, of the benefits of policosanol + AS therapy on stroke outcomes over the conventional AS therapy. In such regard, a previous 6 months clinical study

Table II. Effects on the neurological recovery assessed through the modified Rankin Scale (mean ± standard deviation).

	Baseline	1.5 months	3 months	4.5 months	6 months
Placebo + aspirin	2.7 ± 0.5	2.6 ± 0.5	2.6 ± 0.5	2.6 ± 0.7	2.5 ± 0.6 [a]
Policosanol + aspirin	2.9 ± 0.5	2.3 ± 0.6 [b,c]	1.8 ± 0.6 [b,d]	1.4 ± 0.5 [b,e]	1,1 ± 0,6 [b,e]

Comparisons vs baseline (Wilcoxon test for matched samples, Bonferroni adjustment): [a] $p < 0.00125$; [b] $p < 0.0001$. Comparison vs placebo + aspirin (Mann-Whitney *U* test): [c] $p < 0.01$; [d] $p < 0.001$; [e] $p < 0.0001$.

Table III. Distribution of cases in accordance to the modified Ranking Scale (mRS) score.

	Baseline		3 months		6 months	
	Policosanol + aspirin	Placebo + aspirin	Policosanol + aspirin	Placebo + aspirin	Policosanol + aspirin	Placebo + aspirin
mRS 0	0	0	0	0	3	0
mRS 1	0	0	20 [a]	0	54 [b]	5
mRS 0-1	0	0	20 [a]	0	57 [b]	6
mRS 2-3	67	69	51 [a]	70	14 [b]	59
mRS 4	4	2	0	1	0	1

Comparisons vs placebo + aspirin (Fisher's exact probability test): [a] $p < 0.05$; [b] $p < 0.001$.

Table IV. Effects on lipid profile (mean ± standard deviation).

		Baseline	3 months	6 months
LDL-C (mmol/L)	Placebo + aspirin	3.43 ± 0.97	3.57 ± 0.89	3.55 ± 1.04
	Policosanol + aspirin	3.45 ± 1.00	3.05 ± 1.10 [a,c]	2.63 ± 0.65 [b,d]
Total cholesterol (mmol/L)	Placebo + aspirin	5.76 ± 1.23	5.82 ± 1.33	5.80 ± 1.25
	Policosanol + aspirin	5.78 ± 1.26	5.30 ± 1.17 [a,c]	5.16 ± 1.02 [a,c]
HDL-C (mmol/L)	Placebo + aspirin	1.33 ± 0.42	1.29 ± 0.31	1.32 ± 0.35
	Policosanol + aspirin	1.32 ± 0.40	1.35 ± 0.39	1.40 ± 0.37 [a,c]
Triglycerides (mmol/L)	Placebo + aspirin	1.79 ± 0.95	1.82 ± 0.92	1.79 ± 0.89
	Policosanol + aspirin	1.77 ± 0.89	1.80 ± 0.89	1.69 ± 0.57

Comparison vs baseline (Wilcoxon test for matched samples): [a] $p < 0.05$; [b] $p < 0.01$. Comparison vs placebo + aspirin (Mann-Whitney *U* test): [c] $p < 0.05$; [d] $p < 0.01$.

Table V. Effects on blood arterial pressure (mean ± standard deviation).

		Baseline	1.5 months	3 months	4.5 months	6 months
Diastolic blood pressure (mmHg)	Placebo + aspirin	84.01 ± 4.33	82.83 ± 3.57	82.94 ± 3.34	82.13 ± 3.86 [a]	82.17 ± 3.53 [a]
	Policosanol + aspirin	83.88 ± 4.54	80.71 ± 3.71	79.07 ± 4.12 [a,e]	78.15 ± 4.23 [b,e]	77.25 ± 4.18 [b,e]
Systolic blood pressure (mmHg)	Placebo + aspirin	134.38 ± 7.11	132.23 ± 5.94	132.59 ± 6.25	131.50 ± 5.88 [a]	129.23 ± 5.13 [a]
	Policosanol + aspirin	132.94 ± 7.28	126.87 ± 5.35 [b,e]	124.57 ± 5.91 [c,f]	122.56 ± 4.82 [d,g]	122.00 ± 4.03 [d,g]

Comparison vs baseline (Wilcoxon test, Bonferroni adjustment): [a] $p < 0.0125$; [b] $p < 0.001$; [c] $p < 0.0001$; [d] $p < 0.00001$. Comparison vs placebo (Mann-Whitney *U* test): [e] $p < 0.01$; [f] $p < 0.001$; [g] $p < 0.0001$.

conducted in patients who had suffered non-cardioembolic ischemic stroke demonstrated that the antiplatelet efficacy of policosanol + AS was better than that of placebo + AS [19]. A recent study demonstrated that it inhibits cyclooxygenase 1 (COX-1) activity *in vitro*, which makes rationale that it may inhibit platelet aggregation [43].

Lipid lowering drugs lowers the stroke risk [11, 21]. Greater reductions in stroke risk are associated with higher LDL-C decreases [11]. In a large meta-analysis that included data of 113,000 patients, statin therapy at stroke onset was associated with improved outcome [44].

In this sense also beneficial effects of policosanol on serum lipids (LDL-C and TC decrease, HDL-C increase), may contribute to the benefits of policosanol + AS on stroke outcomes since LDL-C reduction and HDL-C increase are linked to stroke recovery and prevention [11,45].

Recent data have shown that pretreatment with statins, hypercholesterolemia or both in ischaemic stroke patients could have neuroprotective effects with reduced neurological deficits at presentation, lower early death and dependency rate, thus increasing the chances for good outcome [46].

Moreover, policosanol (20 mg/day) and atorvastatin (20 mg/day), administered for 12 weeks within the next 30 days after stroke onset, were similarly effective for improving the functional outcome in patients with recent ischemic stroke, all treated with AS [21].

The cholesterol-lowering activity of policosanol involves the inhibition of cholesterol synthesis by regulating HMG-CoA reductase through activation of AMP-kinase [47,48], the main regulatory kinase for HMG-CoA reductase. Policosanol treatment of hepatoma cells increased AMP-kinase phosphorylation, providing a clue by which it might down-regulate HMG-CoA reductase activity and decrease cholesterol synthesis without directly inhibiting the enzyme, since AMP-kinase [48]. Further studies demonstrated that metabolic transformation of very long chain alcohols to fatty acids is needed for the suppression of cholesterol synthesis, presumably by increasing cellular AMP levels [49]. In turn, the mechanism(s) responsible of HDL-C elevation by policosanol have not been demonstrated. Recent studies have proven that policosanol enhances HDL functionality improving anti-glycation, anti-apoptosis, and cholesterol ester transfer inhibition *in vitro* [49,50].

In agreement with previous studies, policosanol + AS was safe and well tolerated. The decrease of systolic and diastolic blood pressure seen in policosanol + AS group is consistent with some previous data [19-24,33], indicating an additional lowering pressure effect of policosanol. Such additive effects on arterial pressure must be in relation with pleiotropic effects of policosanol, mainly those supporting beneficial effects on endothelial function.

In conclusion, the treatment for 6 months with policosanol + AS in hypertensive patients who had suffered a non-cardioembolic ischemic stroke proved to be more effective than the placebo + AS treatment in the functional recovery of these patients. Further multicentric, randomized, double-blind, controlled studies including larger sample size are required to confirm these results.

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Efectos del policosanol en la recuperación funcional de pacientes hipertensos con ictus isquémico no cardioembólico

Introducción. Los resultados de los estudios clínicos muestran que el tratamiento con policosanol (20 mg/día) + aspirina produce beneficios frente a placebo + aspirina en pacientes con ictus isquémico no cardioembólico reciente.

Objetivo. Analizar los efectos del tratamiento con policosanol en pacientes hipertensos incluidos en dos ensayos de recuperación de ictus isquémico no cardioembólico.

Pacientes y métodos. Pacientes hipertensos que sufrieron un ictus en los 30 días previos y que, con una puntuación de 2 a 4 en la escala de Rankin modificada (mRS), se distribuyeron aleatoriamente en dos grupos y recibieron policosanol + aspirina o placebo + aspirina durante seis meses. La variable primaria de eficacia fue la reducción de la puntuación en la mRS.

Resultados. Se incluyó a un total de 142 pacientes hipertensos (edad media: 66 años) en el análisis. El policosanol + aspirina disminuyó significativamente la puntuación de la mRS desde el primer chequeo intermedio. El efecto del tratamiento con policosanol no desapareció, sino que incluso mejoró después de seis meses de tratamiento. El número de pacientes que alcanzaron valores de la mRS ≤ 1 fue mayor en el grupo de policosanol + aspirina (80,3%) que en el de placebo + aspirina (8,5%). Dos pacientes causaron baja del estudio y cuatro (dos de cada grupo) refirieron efectos adversos leves.

Conclusiones. El tratamiento durante seis meses con policosanol + aspirina a pacientes hipertensos que habían sufrido un ictus isquémico no cardioembólico demostró ser más efectivo que el tratamiento con placebo + aspirina en su recuperación funcional.

Palabras clave. Aspirina. Hipertensión. Ictus isquémico no cardioembólico. Policosanol. Recuperación.