

Hypertension and Atrial Fibrillation in Stroke Patients

Nadciśnienie tętnicze i migotanie przedsionków u pacjentów z udarem mózgu

Anna Narożnik¹, Agnieszka Saracen², Zbigniew Kotwica³

❶ Department of Neurology, Specialist Hospital Dr Tytus Chałubiński Radom, Poland

❷ Faculty of Medical Sciences and Health Sciences, Casimir Pułaski Radom University, Radom, Poland

❸ Faculty of Medical Science, Collegium Medicum, Cardinal Stefan Wyszyński University, Warsaw, Poland

Abstract

Introduction. Hypertension and atrial fibrillation are the most significant risk factors for stroke, both ischaemic and haemorrhagic. They may also have a significant impact on the prognosis of stroke patients.

Aim. Assessment of the impact of hypertension and atrial fibrillation on treatment outcomes in patients with stroke.

Materials and Methods. A retrospective analysis was conducted on medical records of 2,423 patients — 1280 (52.8%) men and 1143 (47.2%) women — admitted directly after stroke to the neurology ward of the Dr Tytus Chałubiński Hospital in Radom between 2020 and 2023. Men were aged 27–98 years, with a mean age of 70 years, and women were aged 23–102 years, with a mean age of 76.4 years. The analysis assessed the condition on admission using the modified Rankin scale, the presence of hypertension or atrial fibrillation, and the outcome of treatment according to the Rankin scale.

Results. Ischaemic stroke was diagnosed in 1244 (51%) patients, haemorrhagic stroke in 917 (38%), and subarachnoid haemorrhage in 262 (11%). Subarachnoid haemorrhage was significantly more common in men, whilst intracerebral haemorrhage was more common in women. On admission, 85% of men and 81% of women were in Rankin scale grades 1–3, whilst 15% of men and 19% of women were in grades 4–5. Women were significantly more likely to be in a worse condition on admission, and these findings were also observed at the end of treatment. Hypertension was present in 2055 (85%) patients. On admission, no statistically significant differences in general condition were found between patients with and without hypertension in either sex. At discharge, significantly better treatment outcomes were observed in men with hypertension than in those without; in women, there was no statistical difference. Atrial fibrillation was found in 648 (27%) patients, significantly more frequently in women (34%) than in men (20%). In both sexes, atrial fibrillation was significantly more often associated with a poorer outcome.

Conclusions. 85% of patients hospitalised for stroke had hypertension, 27% had atrial fibrillation. No association was found between hypertension and poorer treatment outcomes; atrial fibrillation was associated with significantly poorer stroke treatment outcomes. (JNNN 2026;15(1):17–20)

Key Words: atrial fibrillation, hypertension, stroke, treatment outcomes

Streszczenie

Wstęp. Nadciśnienie tętnicze i migotanie przedsionków są najważniejszymi czynnikami zwiększającymi ryzyko wystąpienia udaru mózgu, zarówno niedokrwiennego jak i krwotocznego. Oba schorzenia mogą mieć również istotny wpływ na rokowanie u pacjentów z udarem mózgu.

Cel. Ocena wpływu nadciśnienia tętniczego i migotania przedsionków na wyniki leczenia pacjentów z udarem mózgu.

Materiał i metody. Poddano retrospektywnej analizie historie chorób 2423 pacjentów — 1280 (52,8%) mężczyzn i 1143 (47,2%) kobiet hospitalizowanych bezpośrednio po udarze mózgu w oddziale neurologii szp. im. dr Tytusa Chałubińskiego w Radomiu w latach 2020–2023. Mężczyźni byli w wieku 27–98 lat, średnia 70 lat, a kobiety w wieku 23–102 lata, średnia 76,4 lat. Analizowano stan przy przyjęciu wg zmodyfikowanej skali Rankin, obciążenie nadciśnieniem tętniczym lub migotaniem przedsionków, oraz wynik leczenia wg skali Rankin.

Wyniki. U 1244 (51%) pacjentów stwierdzono udar niedokrwienny, u 917 (38%) krwotoczny, 262 (11%) krwotok podpajęczynówkowy. Krwotok podpajęczynówkowy istotnie częściej stwierdzano u mężczyzn, zaś krwotok śródmózgowy u kobiet. Przy przyjęciu 85% mężczyzn i 81% kobiet było w grupach 1–3 skali Rankina, zaś 15% mężczyzn i 19% kobiet w grupach 4–5. Kobiety przy przyjęciu były istotnie częściej w gorszym stanie i takie wyniki stwierdzono również przy zakończeniu leczenia. Na nadciśnienie tętnicze chorowało 2055 (85%) osób. Przy przyjęciu nie stwierdzono różnic statystycznych stanu ogólnego pomiędzy pacjentami z nadciśnieniem i bez niego u obu płci. Przy wypisie uzyskano istotnie lepsze wyniki leczenia u mężczyzn z nadciśnieniem tętniczym niż bez nadciśnienia, u kobiet nie było różnicy statystycznej. Migotanie przedsionków stwierdzono u 648 (27%) pacjentów, istotnie częściej u kobiet — 34% niż u mężczyzn — 20%. U obu płci migotanie przedsionków istotnie częściej powodowało gorszy wynik.

Wnioski. 85% pacjentów hospitalizowanych z powodu udaru mózgu chorowało na nadciśnienie tętnicze, 27% miało migotanie przedsionków. Nie stwierdzono wpływu nadciśnienia tętniczego na uzyskanie gorszych wyników leczenia, migotanie przedsionków powodowało istotnie gorsze wyniki leczenia udaru. (PNN 2026;15(1):17–20)

Słowa kluczowe: migotanie przedsionków, nadciśnienie tętnicze, udar mózgu, wyniki leczenia

Introduction

The treatment of high blood pressure and atrial fibrillation are the most important factors in reducing the risk of stroke, whether ischaemic or haemorrhagic [1,2].

Treatment of arterial hypertension (AH) and atrial fibrillation (AF) are possibly the most important interventions for prevention of ischemic or hemorrhagic stroke. Hypertension, defined as a systolic blood pressure (SBP) ≥ 140 mm Hg or a diastolic blood pressure (DBP) ≥ 90 mm Hg is found in around 70% of patients with ischaemic stroke. The risk for a first ischemic stroke is directly related to blood pressure (BP) and probably the relationship with recurrent stroke is similar [3–5].

Patients with AF reveal higher prevalence of ischemic brain infarcts than without AF despite comparable comorbidities [6–8]. In patients with subclinical symptoms of AF the risk of ischemic stroke depends on the duration of AF. If episodes of AF last no longer than a few minutes they are not relevant, but if the duration exceeds 24 hours the risk of cerebral ischemia increases more than threefold [9]. Most patients with AF take anticoagulants, although their efficacy has not yet been conclusively proven, and their use is sometimes associated with serious bleeding complications, including cerebral haemorrhage [7,9,10]. The utility of oral anticoagulation, for preventing stroke is still under debate [8,9].

The aim of our study was to investigate the impact of AH and AF on the outcomes of stroke treatment.

Material and Methods

The medical records of 2423 (100%) patients were analysed retrospectively — 1280 (52.8%) men and 1143 (47.2%) women hospitalised immediately after stroke in the neurology department of the Dr Tytus Chałubiński Hospital in Radom between 2020 and 2023. The analysis

assessed the condition on admission using the modified Rankin Scale (mRS) [11], the presence of hypertension or atrial fibrillation, and the outcome of treatment at discharge according to mRS.

Data were presented as absolute numbers and percentages. The baseline characteristics between patients were compared using a chi-square test and Pearson test. P values below 0.01 were deemed significant. The study was approved by the Ethics Committee of Faculty of Medical Sciences and Health Sciences, Casimir Pułaski University, Radom, No 12/2025/KB/12/2025.

Results

The men were aged between 27 and 98, with a mean age of 70, whilst the women were aged between 23 and 102, with a mean age of 76.4. There were significantly more men in the study group, and the women were significantly older. Ischaemic stroke was diagnosed in 1,244 (51%) patients, haemorrhagic stroke in 917 (38%), and subarachnoid haemorrhage (SAH) in 262 (11%). SAH was significantly more common in men, whilst intracerebral haemorrhage was more common in women. These results are shown in Table 1.

Table 1. Type of stroke according to gender

Type of stroke \ Gender	Men	Women	Total
SAH	172 (65.5%) 13.4% of men	90 (34.5%) 7.9% of women	262 (11%)
Intracerebral bleeding	453 (49.4%) 35.4% of men	464 (40.6%) 40.6% of women	917 (38%)
Ischemic stroke	655 (52.6%) 51.2% of men	589 (47.4%) 51.5% of women	1244 (51%)
Total	1280 (52.8%)	1143 (47.2%)	2423 (100%)

On admission, 1088 (85%) of the 1280 men and 926 of the 1143 women (81%) were in mRS grades 1–3, whilst 15% of men and 19% of women were in grades 4–5. Women were significantly more likely to be in a worse clinical condition on admission.

On discharge, 69% of men were in mRS groups 0–3, 20.5% in groups 4–5, and 138 (10.5%) had died. 58% of women were discharged in mRS groups 0–3, 28% in groups 3–4, and 162 (14%) had died. Women were in a significantly worse clinical condition at discharge. In the group of patients admitted at mRS grades 4–5, no one achieved a good treatment outcome, whilst over 55% of patients died, with no difference between the sexes.

Table 2 shows the clinical condition on admission and at the end of hospital treatment.

Table 2. Clinical condition on admission and at the end of hospital treatment

Rankin on admission \ Rankin on discharge	0–3	4–5	6 (death)	Total
1–3	1546 (76%)	393 (20%)	75 (4%)	2014 (100%)
4–5	0	184 (45%)	225 (55%)	409 (100%)
Total	1546 (64%)	577 (24%)	300 (12%)	2423 (100%)

Table 3. Treatment outcomes for patients with hypertension

Arterial hypertension	Stroke course					
	Favourable*		Poor**		Total	
	Men	Women	Men	Women	Men	Women
Diagnosed	742	582	311	420	1053	1002
Absent	137	85	90	56	227	141
Total	879	667	401	476	1280	1143

*A favourable outcome of a stroke means that there was no deterioration in the patient's condition during treatment and that their condition on discharge was 1–3 in Rankin scale, **A poor stroke outcome is defined as a deterioration in the patient's condition during treatment and a Rankin scale score of over 3 at discharge

Table 4. Treatment outcomes for patients with atrial fibrillation

Atrial fibrillation	Stroke course					
	Favourable*		Poor**		Total	
	Men	Women	Men	Women	Men	Women
Diagnosed	138	179	113	218	251	397
Absent	741	488	288	258	1029	746
Total	879	667	401	476	1280	1143

*A favourable outcome of a stroke means that there was no deterioration in the patient's condition during treatment and that their condition on discharge was 1–3 in Rankin scale, **A poor stroke outcome is defined as a deterioration in the patient's condition during treatment and a Rankin scale score of over 3 at discharge

Of 2423 patients, 2055 (85%) had a history of hypertension — 82% of men and 88% of women. Hypertension was slightly more common in women. On admission, no statistically significant differences in general health were observed between patients with and without hypertension in either sex. At discharge, significantly better treatment outcomes were observed in men with hypertension than in those without; in women, there was no statistical difference. Table 3 shows the treatment outcomes for patients with hypertension.

Atrial fibrillation was present in 648 (27%) patients, and was significantly more common in women (34%) than in men (20%). In both sexes, atrial fibrillation was statistically more frequently associated with an unfavourable treatment outcome. These results are shown in Table 4.

Discussion

Hypertension is a factor that not only increases the risk of stroke but also leads to unfavourable outcomes, particularly in men [1,3,12]. In outpatient care, monitoring blood pressure and achieving its normalisation through medication is a fundamental preventive measure, whilst providing detailed education to patients at increased risk of stroke and regarding poorer treatment outcomes in patients with hypertension is an important responsibility of all medical staff [2,8,10,13]. In our study, hypertension was found in 85% of stroke patients, and was slightly more common in women than in men. Contrary to other reports [1,3,5], we found no association between the presence of hypertension and poor treatment outcomes, and in men with hypertension, treatment outcomes were statistically better than in patients without hypertension. This may be due to the fact that patients with hypertension, as a result of persistent circulatory disturbances, develop collateral circulation, which helps to mitigate the effects of stroke.

Atrial fibrillation, like hypertension, significantly increases the risk of stroke, particularly ischaemic stroke [6–9]. In our study, atrial fibrillation was present in 27% of patients, and was significantly more common in women — 34% versus 20%. In both sexes, atrial fibrillation resulted in significantly poorer treatment outcomes than in the absence of the condition. 70% of patients without atrial fibrillation had a good treatment outcome in compare to 50% in patients with AF. It proves, that atrial fibrillation is more significant risk factor than hypertension. Patients must be fully aware of the need for frequent heart rhythm monitoring and the regular intake of both antiarrhythmic and anticoagulant medications [10,13,14]. It seems entirely justified to recommend

the use of heart rate monitoring watches, that alert in the event of arrhythmias, what can have a significant impact on treatment adjustments and, consequently, reduce not only the incidence of stroke but also the severity of its clinical course [14].

Conclusions

Atrial fibrillation, like hypertension, significantly increases the risk of stroke, particularly ischaemic stroke. Atrial fibrillation is more significant risk factor than hypertension. Patients must be fully aware of the need for frequent heart rhythm monitoring and the regular intake of both antiarrhythmic and anticoagulant medications. It seems entirely justified to recommend the use of heart rate monitoring watches.

Implications for Nursing Practice

Hypertension is a factor that not only increases the risk of stroke but also leads to poorer treatment outcomes, particularly in men. In outpatient care, monitoring blood pressure and normalising it through medication is a fundamental preventive measure, whilst providing detailed education to patients about the increased risk of stroke and poorer treatment outcomes in patients with hypertension is an important responsibility of all medical staff. The same applies to atrial fibrillation; patients must be fully aware of the need for frequent heart rhythm monitoring and the regular intake of both antiarrhythmic and anticoagulant medications. It seems entirely justified to recommend the use of heart rate monitors — smart watches, that alert the wearer in the event of arrhythmias, as this can have a significant impact on treatment adjustments and, consequently, reduce not only the incidence of stroke but also its clinical severity.

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Corresponding Author:

Zbigniew Kotwica

Collegium Medicum,
Cardinal Stefan Wyszyński University
Wóycickiego 1/3 street, 01-938 Warsaw, Poland
e-mail: zbigniew.kotwica@poczta.onet.pl

Conflict of Interest: None

Funding: None

Author Contributions: Anna Narożnik^{A-E, H} ,
Agnieszka Saracen^{A, C, E, F, H} , Zbigniew Kotwica^{C-F, H} 

A — Concept and design of research, B — Collection and/or compilation of data, C — Analysis and interpretation of data, D — Statistical analysis, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article

Received: 14.12.2025

Accepted: 20.01.2026