IJCNP, Volume 3, Issue 6, 2025 ISSN: 2995-536X
https://medicaljournals.eu/index.php/IJCNP

INTERNATIONAL JOURNAL OF COGNITIVE NEUROSCIENCE AND PSYCHOLOGY

ANTIPLATELET AGENTS IN THE TREATMENT AND SECONDARY PREVENTION OF ISCHEMIC STROKE

Ibokhimov Dilshod Dilmurod ogli
Clinical Resident, Department of Neurology Samarkand State Medical University

Urolov Zhavlonbek Yuzbay ogli
Clinical Resident, Department of Neurology Samarkand State Medical University

Omonkulova Shokhsanam Otajon qizi
Clinical Resident, Department of Neurology Samarkand State Medical University

Khabibullaev Fayoziddin Tolibjon ogli
Clinical Resident, Department of Neurology Samarkand State Medical University

Kasimov Arslanbek Atabaevich
PhD, Associate Professor, Department of Neurology Samarkand State Medical University

Abstract: This literature review presents current concepts of antiplatelet therapy as an important component of secondary prevention of ischemic stroke. Based on evidence-based medicine data, characteristics of antiplatelet agents included in clinical guidelines and standards for treating patients with ischemic stroke are presented. The main principles of selection and tactics for prescribing antiplatelet drugs to patients with ischemic stroke at different stages of the disease are provided.

Key words: antiplatelet agents, antiplatelet therapy, secondary prevention, ischemic stroke

Introduction. Ischemic stroke (IS) is a syndrome complex characterizing acute cerebrovascular accident (CVA). In the structure of CVA, IS comprises 80–88% [2]. Cerebral stroke represents one of the leading medical, social, and economic problems, which is explained by the high level of morbidity and mortality from CVA and unfavorable disability index. It is known that approximately 450,000 people suffer strokes annually in Russia, with 22% of patients experiencing recurrent stroke. During the first month after stroke, 35% of stroke patients die, and more than 200,000 patients die from stroke consequences within 12 months. The World Health Organization (WHO) predicts further continued growth in CVA incidence over several decades [3].

Considering the above facts, the question arises about the need to implement effective preventive measures in practice both among the healthy population and among patients who have suffered stroke. Foreign practice shows that through targeted work on improving CVA prevention measures, significant reduction in stroke mortality can be achieved [7]. Since Russia occupies leading positions in the frequency of recurrent strokes, ranging from 20 to 40% per year in different regions, particular attention should be paid to secondary CVA prevention. This means that parallel to providing emergency specialized medical care to patients with vascular catastrophe, prevention of recurrent stroke must be initiated [10].

The main principles of secondary prevention, like primary prevention, are risk factor correction and drug therapy. The strategy of personalized secondary CVA prevention is developed during the first day of patient hospitalization. Secondary drug prevention is reflected in standards of specialized medical care and includes the use of antihypertensive, antithrombotic drugs, statins, correction of carbohydrate metabolism disorders, and surgical treatment methods when necessary [1].

Antiplatelet therapy is the main component in the treatment and secondary prevention scheme for patients who have suffered IS (class I, level A). Antiplatelet agents should be prescribed from the first day of IS and used long-term. The use of antiplatelet agents in this case is based on high evidence of their effectiveness (reduction in the number of non-fatal stroke cases and vascular mortality by a quarter), including according to large meta-analyses data [9].

A meta-analysis of more than two thousand studies on antiplatelet agent effectiveness and safety showed that the use of antiplatelet drugs in therapy contributes to reducing the risk of vascular catastrophes in patients after stroke and TIA by more than 3%. A meta-analysis of studies on antiplatelet agent use in secondary prevention demonstrated proven effectiveness of acetylsalicylic acid (ASA) regarding the frequency of vascular events (myocardial infarction, CVA). Nevertheless, numerous studies have shown a statistically significant relationship between ASA use and the risk of developing serious complications such as hemorrhagic stroke, including fatal outcomes [1].

A meta-analysis of almost three hundred studies, including more than 200,000 patients who received antiplatelet agents as secondary prevention after IS or TIA debut, revealed significant (25%) regression in the frequency of vascular catastrophes such as myocardial infarction, stroke, or vascular death. This fact prevailed over the risk of serious extracranial bleeding [10].

Increased platelet aggregation ability is the main pathogenetic link in CVA, which explains the significance of using antiplatelet drugs in cerebral stroke prevention. Currently used antiplatelet agents have different points of interaction with platelets. ASA inhibits cyclooxygenase, which affects thromboxane A2 synthesis. Dipyridamole changes the level of cyclic nucleotides, adenosine diphosphate, thrombin, and arachidonic acid. Clopidogrel and ticlopidine perform irreversible inhibition of platelet ADP receptors. Glycoprotein IIb/IIIa receptor blockers disrupt platelet aggregate formation [1].

As discussed earlier, ASA can provoke hemorrhagic complications. However, the potential effectiveness of ASA in preventing vascular catastrophes (myocardial infarction, stroke) confirms the relevance of ASA use in secondary prevention schemes for IS patients. When using ASA, the principle of dose-dependent side effect development applies: the higher the ASA dose, the greater the probability of hemorrhagic complications. Conversely, low ASA doses are considered safer. For example, ulcerogenic action manifests to a lesser degree when using lower ASA doses, as there is less disruption of prostacyclin and prostaglandin E2 synthesis in gastric mucosa. Nevertheless, it is proven today that the frequency of serious hemorrhagic complications is not dose-dependent. A meta-analysis of 22 studies including more than 30,000 patients revealed that low ASA doses (up to 325 mg/day) used for vascular catastrophe prevention significantly increase major bleeding frequency by 71%.

ASA is not recommended for patients with refractory hypertension due to high risk of hemorrhagic complications. ASA use should be accompanied by mandatory blood pressure monitoring. ASA prescription is also not recommended in the first 24 hours after thrombolysis.

Dipyridamole

Results of large-scale studies conducted in Europe demonstrated the feasibility of combining ASA with extended-release dipyridamole. Such a combination of antiplatelet active substances helps achieve increased effectiveness of secondary stroke prevention by an average of 20% with low potential for hemorrhagic complications. The most frequent side effect of dipyridamole use is headache, less commonly dizziness and hypotension. It should be remembered that dipyridamole has coronary dilating action, and in patients with coronary syndrome it may provoke "steal syndrome" [1, 10, 11].

Clopidogrel

Several large multicenter clinical studies are devoted to studying clopidogrel effectiveness in secondary stroke prevention. Clopidogrel at 75 mg/day proved more effective than ASA at 325 mg/day by almost 9%. The frequency of side effects with clopidogrel and ASA therapy was comparable, while

gastrointestinal bleeding was more common with ASA [1]. Clopidogrel is an alternative drug for patients who have contraindications to ASA for various reasons, as well as for high-risk patients with stroke, diabetes mellitus, coronary syndrome, and peripheral artery diseases [2].

Combined use of clopidogrel and ASA had an effectiveness advantage over ASA monotherapy in percutaneous coronary interventions and acute coronary syndrome, while combination therapy (clopidogrel + ASA) did not show superiority compared to clopidogrel monotherapy in IS/TIA patients. Nevertheless, the combination of clopidogrel with ASA proved more effective than ASA monotherapy in IS prevention in patients with cardioembolic stroke when vitamin K antagonist use was impossible for various reasons.

Ticlopidine

Comparative studies of ticlopidine and ASA effectiveness in patients with non-cardioembolic IS showed that the risk of cardiovascular events was comparable in both groups. The frequency of hemorrhagic complications with ticlopidine and ASA was the same [10].

At the current stage of developing approaches to IS/TIA therapy and prevention, meta-analysis results and full-scale studies, latest recommendations, and currently available medical care standards are taken into account [1]:

1. IS patients are recommended to receive antiplatelet agents (class I, level A).
2. If CVA patients are not indicated for anticoagulant therapy, they should be prescribed antiplatelet agents (class I, level A). In this case, the use of combined ASA + dipyridamole or clopidogrel is indicated. ASA or triflusal use is acceptable (class I, level A).
3. For IS patients without such indications as unstable angina, non-Q wave myocardial infarction, stenting, combined clopidogrel and ASA therapy is not indicated (class I, level A).
4. It is important to dynamically assess stroke risk factors and the condition of patients who have had recurrent CVA while taking antiplatelet agents (class IV, GCP).
5. Patients with ischemic stroke associated with atrial fibrillation are indicated for anticoagulant therapy (class I, level A). If there are frequent patient falls, non-compliance with doctor's recommendations regarding prescribed therapy, uncontrolled epilepsy, and hemorrhagic complications of any nature, oral anticoagulants are not recommended (class III, level C).
6. In non-cardioembolic stroke, anticoagulants are generally not prescribed. Exceptions include cases when aortic atheroma, fusiform basilar artery aneurysm, patent foramen ovale combined with deep vein thrombosis or atrial septal aneurysm is diagnosed, or neck artery dissection is performed (class IV, GCP).

Currently, based on large study results and best foreign practices, tactics for prescribing antiplatelet agents in IS secondary prevention have been developed and continue to be improved. In IS development, already on the first day, patients without contraindications for antiplatelet drug prescription are given first-line antiplatelet agents (ASA at 75–150 mg/day; clopidogrel – 75 mg/day, etc.). These patients should generally take these drugs permanently (lifelong). If the patient underwent or is planned for thrombolysis, antiplatelet agents are prescribed later. Mandatory blood pressure monitoring is required, especially when using ASA. With uncontrolled hypertension, ASA prescription is not recommended due to high risk of hemorrhagic complications.

When several unfavorable IS risk factors are simultaneously present, namely coronary heart disease, peripheral artery atherothrombosis, diabetes mellitus, in IS patients with severe atherosclerotic lesions in several vascular basins, and if recurrent vascular catastrophe occurred while taking ASA, clopidogrel is the first-choice drug. With clopidogrel intolerance and existing contraindications, ticlopidine may be prescribed. In non-cardioembolic IS, antiplatelet agents are prescribed, as a rule, as monotherapy, which significantly reduces the risk of hemorrhagic complications; anticoagulants in such patients have no advantages. Combination therapy (ASA 75–325 mg/day and clopidogrel 75

mg/day) is prescribed for patients planned for or who underwent carotid artery stenting (both before and after surgery for an average of three months).

If IS or TIA patients are additionally diagnosed with small-focal myocardial infarction (without Q wave formation), dual antiplatelet therapy (ASA 75–150 mg/day + clopidogrel 75 mg/day) is recommended [4].

Currently, it is fully proven that antiplatelet therapy is a key component of secondary stroke prevention. In clinical practice, both first-line antiplatelet agents and reserve drugs are widely used. At the same time, a balanced and safe approach to therapy should not be forgotten. Antiplatelet therapy is important to conduct under control of platelet functional activity status. Platelet aggregation must be determined both before beginning and during antiplatelet therapy. Reduction of residual platelet aggregation activity in patients with high IS risk can serve as one of the criteria for antiplatelet therapy effectiveness.

Additionally, determining platelet aggregation dynamics allows establishing individual patient sensitivity to the already used drug and, when necessary, conducting justified replacement of one antiplatelet agent with another (for example, with ASA resistance), minimizing the risk of hemorrhagic complications. With modern laboratory diagnostics development, doctors have gained additional opportunity to use pharmacogenetic tests, which allows personalized and more targeted approaches to drug therapy issues, including antiplatelet drugs [5].

Conclusions. Thus, the question of using antiplatelet agents in IS treatment and secondary prevention appears, on one hand, quite simple and successfully resolved, and on the other hand, complex and multifaceted, requiring a careful algorithmic approach to choosing a specific drug, its dose, application tactics, and the use of modern methods for controlling antiplatelet therapy effectiveness and safety.

Literature:

1. Ilkhomovna, K. M., Eriyigitovich, I. S., & Kadyrovich, K. N. (2020). Morphological Features of microvascular Tissue of the Brain at hemorrhagic stroke. The American Journal of Medical Sciences and Pharmaceutical Research, 2(10), 53-59.
2. Kadyrovich, K. N., Erkinovich, S. K., & Ilhomovna, K. M. (2021). Microscopic Examination Of Postcapillary Cerebral Venues In Hemorrhagic Stroke. The American Journal of Medical Sciences and Pharmaceutical Research, 3(08), 69-73.
3. Камалова, М. И., & Хайдаров, Н. К. (2020). Prevention and risk factors for brain infarction (literature review). Журнал неврологии и нейрохирургических исследований, 1(2).
4. Ismoilov, O. I., Murodkosimov, S. M., Kamalova, M. I., Turaev, A. Y., & Mahmudova, S. K. (2021). The Spread Of SARS-Cov-2 Coronavirus In Uzbekistan And Current Response Measures. The American Journal of Medical Sciences and Pharmaceutical Research, 3(03), 45-50.
5. Shomurodov, K., Khaidarov, N., & Kamalova, M. (2021). The formation and eruption of baby teeth in children. Збгрник наукових праць SCIENTIA.
6. Khodjieva D. T., Khaydarova D. K., Khaydarov N. K. Complex evaluation of clinical and instrumental data for justification of optive treatment activites in patients with resistant forms of epilepsy //American Journal of Research. USA. – 2018. – №. 11-12. – С. 186-193.
7. Kamalova M. I., Khaidarov N. K., Islamov S. E. Pathomorphological Features of hemorrhagic brain strokes //Journal of Biomedicine and Practice. – 2020. – С. 101-105.
8. Ershov V. I. The acute period of ischemic stroke: abstract of the dissertation of the Doctor of Medical Sciences/ V. I. Ershov.— Orenburg, 2007. — 88 p.
9. Odinak M. M. Cerebral ischemia. Neuroprotective therapy. Differential approach/M. M. Odinak, I. A. Voznyuk, S. N. Yanishevskii.— St. Petersburg, 2002. — 250 p.

10. Ilkhomovna K. M., Kadyrovich K. N., Eriyigitovich I. S. Clinical and demographicquality of life for patients with ischemic stroke in Uzbekistan //ACADEMICIA: An International Multidisciplinary Research Journal. – 2020. – Т. 10. – №. 10. – С. 883-889.
11. Kamalova M., Khaidarov N. Assessment of quality of life in ischaemic stroke patients //Збірник наукових праць Scientia. – 2021