

Analysis of the Main Aggravating Consequences of Transient Ischemic Attacks

Аналіз основних аграваційних наслідків транзиторних ішемічних атак

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ABSTRACT

The purpose of the article is to analyze the psychological consequences, including the aggravating ones, of such a typical phenomenon as a transient ischemic attack.

Methods of the research. Research methods included both hardware (SCT, MRI) and mandatory screening diagnostic methods (MMSE, Verbal Fluency Test), as well as personal questionnaires and tests of emotional states (Mini-Mult, PHQ-9, HADS, etc.).

Research results. TIAs are generally thought to have no long-term effects, but patients report experiencing problems ranging from muscle weakness, poor

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memory and fatigue to anxiety, panic attacks and suicidal thoughts. Diagnostic tests have shown that in addition to temporary cognitive decline, patients who have suffered a TIA suffer from increased anxiety, low mood, panic attacks, and even suicidal moods. Also, the aggravating component of the mental state can aggravate family problems, which affects the quality of life.

Conclusions. *This study places important emphasis on a number of factors for the prevention of aggravating consequences of TIA, emphasizing that a timely visit to a doctor, as well as, above all, the organization of an adequate situation of psychological examination, monitoring and counseling helps patients and their families to receive psychological support, which improves the general psychological state and quality of life. The latter performs an important function in ensuring compliant behavior of the victim, ensuring prevention of new exacerbations.*

Key words: *aggravation, transient ischemic attack, mental state, psychological monitoring, compliance.*

Introduction

Transient ischemic attack (TIA) is becoming more and more typical and, therefore, a dangerous accompaniment of modern everyday life. The situation acquires threatening consequences also because TIA affects persons of working age. Among the most frequent psychoemotional consequences of this threatening phenomenon is depressive disorder, which, according to estimates, affects 29% to 33% of patients (Бондаренко, 2022; The real impact of TIA, 2014; Фаргушна, 2014). Depressive state, in turn, is associated with worse prognosis, worse functional recovery, greater difficulties in social reintegration, lower quality of life and increased risk of stroke recurrence. Although apathy and depression can occur together, and the former can be a symptom or expression of the latter, it has been shown that apathy can also occur as an independent symptom of depression. Unlike depression, post-TIA apathy has not been studied yet; although it affects one in three TIA patients and 40% of cases are accompanied with depression (Віничук, 2009; Kahlon, & Nasrallah, 2019; Carnes-Vendrel, Deus, Molina-Seguín, Pifarre, & Purroy, 2019; Vbonde, O'Carroll, Dulamea, Anghel, Chong, & Dumitrasku,

2022). Apathy has also been shown to be consistently associated with poorer levels of functional recovery, poorer general health, and poorer quality of life. Despite minimal or complete resolution of neurologic symptoms, these patients remain vulnerable to these neuropsychiatric complications.

The paradox of the situation is that although magnetic resonance imaging data are important not only for the diagnosis of TIA based on its tissue definition, but also for predicting stroke recurrence after TIA or minor stroke, little information is currently available on neuroimaging data regarding the development of depression and apathy in these patients. Diffusion-weighted imaging can detect signs of acute ischemia in 30% of TIA patients. In addition to transient symptoms, these lesions may also increase the risk of cognitive and emotional impairment. The relationship between the localization of infarcts, the presence of white matter lesions and cerebral microbleeds, as well as cognitive and emotional disturbances, is important. But the problem of objectified predictors and evolution of symptoms of depression and apathy in patients with TIA and minor stroke at least during the first year after stroke remains open (Стадник, 2021). That is why prompt psychodiagnostic examination and appropriate psychological monitoring are extremely important. After all, the psychological consequence of TIA, such as aggravation, takes first place here.

The aim of the article

Until now, in general, little attention is paid to the psychology of such patients in general and, in particular, to the cognitive consequences of TIA. There is no medical and psychological monitoring and regular compliance support. That is why the purpose of this article is to show how dangerous emotional and cognitive disorders are after TIA, what the picture of these disorders looks like in general (symptoms, phenomenology) and what the primary actions should be in order to overcome the aggravating consequences of this vascular attack.

Methods of research

In this work, research methods included: analysis of studies, both hardware (SCT, MRI) and scale methods of screening diagnostics (MMSE, Verbal Fluency Test) both using personal questionnaires and tests of emotional states (Mini-Mult, PHQ -9), HADS, etc.).

Results and discussions

The aggravating effects of transient ischemic attacks refer to temporary exaggerations or worsening of symptoms at the cognitive level that can occur as a result of these short-term episodes of impaired blood flow in the brain. The prevalence of mild cognitive impairment after TIA ranges from 29 to 68% . Pronounced cognitive impairment was found in 8-22% of patients. Studies using a cognitive screening tool and those conducted shortly after TIA or several years later reported the highest rates of impairment (Опос, 2007; Frank, Edo Richard, Frank-Erik, & Ewoud, 2016).

The current understanding of TIA is that the symptoms are short-lived and have no long-term consequences. However, this was not reflected in a survey conducted by the Stroke Association, in which the majority of respondents felt that TIA had affected their lives. The results support the findings of limited research on the impact of TIA, which suggests that people may experience long-term physical or clinical problems, functional impairment, cognitive problems and reduced quality of life.

About 70% of people who have had a TIA have physical or clinical problems. These problems include memory loss (41%), muscle weakness (38%), poor mobility (25%), confusion (26%), speech problems (21%) and difficulty understanding (18%), as well as fatigue, exhaustion, persistent vision problems, loss of balance, and persistent numbness or loss of feeling in an arm or leg (The real impact of TIA, 2014). Some people suffer from one long-term symptom, while others experience several. Over 60% of people say that a TIA has affected them emotionally. People feel vulnerable and lose trust in the world around them, in particular

when leaving the house, and also experience a wide range of emotions, mostly negative, which often cause significant suffering.

Also, people who have experienced a TIA are characterized by increased anxiety, panic attacks, depression, a feeling of shock that this happened to them and a feeling of guilt that they did not take the necessary measures earlier, were not attentive to their state of health and behaved in a harmful way life. Most people worry about having another TIA (73%) or stroke (70%) in the future (Santos, & Canhao, 2020).

TIAs are often thought to have no long-term effects, but patients report experiencing problems ranging from muscle weakness, poor memory and fatigue to anxiety, panic attacks and suicidal thoughts. People also worry that a TIA will affect work, with 58% of working-age people expressing concern about this. Further worries concern the ability to drive a car, the impact on relationships with a partner (35%) (Ganesh, Almekhlafi, Ospel, & Goyal, 2021). Such people need specialized emotional support, improved long-term care after TIA, including treatment of physical, psychological and emotional needs, increased priority of health care and social care.

In general, little attention is paid to the psychology and cognitive consequences of TIA, there is no medico-psychological monitoring and regular compliance support. That is why psychological or cognitive disorders lead to a decrease in the quality of life and affect people's ability to return to work and social activities. Despite the emotional upheaval of experiencing a TIA, some people find a way to get positive out of the experience: they learn to relax and try not to stress; they begin to live at a steady pace, enjoy life, and seek medical information about TIA. Also, TIA patients need involvement in "cardiac rehabilitation programs" (Van Nieuwkerk, Pendledury, & Rothwell, 2021).

The presence of TIA correlates with deficits that may persist well beyond resolution of clinical symptoms, even in the absence of evidence of ischemic tissue damage. These deficits may result from subtle abnormalities in brain structure and/or function that

are not easily assessed with standard clinical and imaging tools currently used in practice. Markers of brain damage after TIA remain an active area of research. Individuals who experience transient symptoms lasting less than 24 hours may have permanent brain damage and are at greater risk for future cerebrovascular events. Disturbance of normal brain function becomes a generally recognized effect of transient ischemic attacks and is associated with behavioral consequences (Barber, Nestor, Wang, Reaume, Carlson, Sajobi, & et al, 2020). While the presence of a new ischemic lesion on imaging remains one of the strongest predictors of subsequent stroke and functional decline. The absence of a lesion does not mean that a person's brain is spared from injury; abnormalities may simply be beyond the scope of standard clinical tools or static imaging techniques. Patients with TIA have evidence of impaired memory and speech, even though the affected networks may be remote from the lesion sites. Assessment of brain function at the network and behavioral levels in TIA may similarly provide more valuable information about behavioral domains than static tissue damage, including individuals without overt lesions. An EEG study recently showed that individuals diagnosed with TIA, the majority without DWI lesions, had increased focal slow-wave activity that persisted for 1 month in some individuals, indicating pathology in the relevant tissue. This was supported by a MEG study that demonstrated increases in both slow (2–6 Hz) and beta (12.5–30 Hz) activity in the affected sensory and motor cortices in individuals who had a TIA without lesions with sensorimotor symptoms (Ganesh, Almekhlafi, Ospel, & Goyal, 2021).

TIA is associated with altered cortical excitability that may persist despite the absence of overt structural brain damage. Identifying subtle behavioral deficits after TIA paves the way for determining the extent to which they predict functional impairment. However, the overall variety and subtlety of symptoms that persist after a TIA or minor stroke present a challenge in differentiating those at risk of disability from those who recover without complications.

Our examinations of patients with the consequences of TIA, carried out with the help of the mentioned methods, indicate that a more detailed characterization of persistent disorders after TIA or minor stroke in a wider set of areas can help to better understand the factors that influence the deterioration of mental functions and conditions and can contribute to the provision of quality psychological monitoring with the patient, which also aims to achieve compliance and prevent repeated attacks. By the way, it is now known that the main risk factors, such as diabetes mellitus, persistent depressive states, a positive result of CT/CT angiography, and female gender, can contribute to an increased risk of disability after TIA. (The real impact, 2014). Thus, transient ischemic attacks can have various consequences, which can be immediate or long-term and require comprehensive (both medical and purely psychological) assistance. Therefore, the **immediate consequences** of a TIA include: a) functional deficits. After a TIA, there may be temporary or permanent limitation of brain functions, such as problems with speech, motor skills, vision or memory; b) risk to life. There is a threat of developing a full stroke, which can lead to serious consequences or even death.

Delayed effects include: a) postthrombotic syndrome. People who have survived a TIA may be more prone to developing thrombosis or deep vein thrombosis (DVT); b) permanent physical limitations. Some people may be left with permanent limitations in their ability to care for themselves or perform certain physical tasks; c) relapses. After a first TIA, the risk of repeated attack increases, especially if there was no adequate treatment or control of risk factors.

A special place is occupied by psychological **aggravating consequences**, such as: a) increased chronic anxiety, b) depressive symptoms, sometimes with panic attacks, c) actual fear of a repeated attack.

After emergency care and recovery, people who have had a TIA may experience any number of these long-term effects of a TIA: memory problems, difficulties with executive activity,

emotional symptoms (such as depression, anxiety, panic attacks), problems with concentration and difficulties with word selection, vision difficulties, slightly slurred speech, weakness or numbness of the upper and/or lower limbs (Tariq, Tsang, Wang, Reaume, Carlson, Sajobi, & et al, 2020).

Although these symptoms may go away over time, if they are still present three months after a TIA, they probably won't go away on their own. Appropriate therapy is needed to help resolve them. To reduce the risk of long-term consequences, it is important to provide, in addition to the necessary functional examinations, psychodiagnostic of the emotional state, behavioral and personal traits that determine the entire symptom complex of the patient's behavior, ensure compliance with the processes of post-hospital preventive treatment, provide the patient with appropriate psychological counseling and, ideally, create conditions for after hospital monitoring. Correct assessment of the patient's condition is crucial in the prevention and management of transient ischemic attacks (TIAs). This allows for quick diagnosis, proper treatment, and taking appropriate measures to minimize the negative impact of TIA on the patient. Key aspects of the role of the correct assessment of the patient's condition are early detection (rapid assessment of TIA symptoms can help in timely detection of the incident and the appropriate direction of the patient to treatment), differential diagnosis (correct assessment of the condition allows to exclude other medical conditions that can simulate TIA symptoms, such as migraine, epilepsy, etc.), identification of risks (assessment of possible risk factors (for example, blood pressure, cholesterol, diabetes) helps to identify features that may contribute to the development of TIA and its consequences), prescribing treatment (a correct assessment helps to prescribe the necessary treatment for a patient who may include anti-hemorrhagic drugs, drugs to lower blood pressure and other drugs), monitoring and control (constant monitoring of the patient's condition after TIA helps to respond in time to any changes and implement the necessary corrections

in treatment), rehabilitation and post-hospital medico-psychological monitoring (Zamboni, Griffanti, Mazzucco, Pendlebury, & Rothwell, 2019; Nicolas, Levi, Evans, Michie, Magin, Quain, & et al, 2020; Bath, Woodhous, Appleton, Beridze, Christensen, & et al., 2018).

In general, the correct assessment of the patient's condition is a critical element in preventing possible complications and managing the consequences of TIA. This allows for quick and appropriate medical intervention, which increases the chances of a full recovery and reduces the risk of long-term consequences. Long-term functional deficits may remain if treatment is delayed or improperly treated. Inadequate treatment and inadequate medical attention can lead to a deterioration in patients' quality of life, as they may face physical and psychological limitations. Incorrect assessment of the patient's condition can lead to aggravating consequences for the patient and his relatives, increase the level of anxiety, induce depressive states, panic attacks and fear of recurrence of vascular events.

Conclusions

1. TIA should be considered and interpreted as an important precursor of stroke. Correct assessment of the patient's condition can help to detect the risk of stroke in time and take measures to prevent it, reducing the likelihood of serious complications.

2. Restoration of functions. With timely detection and correct assessment, rehabilitation measures can be started immediately. This helps to increase the chances of full or maximal recovery of functions such as speech, movement and memory. It will also help to overcome depression, anxiety, apathy and panic attacks.

3. Determination of the treatment plan. Correct assessment of the patient's condition allows the doctor to determine the optimal treatment plan and control the risk of repeated ischemic events.

4. Reduction of mortality. Patients who seek medical care after a TIA have a better chance of survival and prevention of death through early treatment and control of risk factors.

5. Psychological support is of considerable, if not decisive, importance as a holistic preventive set of measures, which includes: operational psychodiagnostic examination, formation of patient compliance with the doctor, post-hospital psychological monitoring and support aimed at improving the general mental and psychological state of the patient, maintaining a healthy lifestyle and quality of life and, in this way, prevention of a possible stroke.

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Бондаренко Нікіта. Аналіз основних аграваційних наслідків транзиторних ішемічних атак.

Мета дослідження. Мета цієї статті – показати, чим небезпечні емоційні та когнітивні розлади після ТІА, як виглядає картина цих розладів загалом (симптоми, феноменологія), та якими мають бути першочергові дії, щоб подолати обтяжливі (аграваційні) наслідки цього судинного нападу.

Методи. У цій роботі використано такі методи дослідження: аналіз досліджень, як апаратні (SCT, MRI), так і шкальні методи скринінгової

діагностики (MMSE, Verbal Fluency Test) як з використанням персональних опитувальників, так і тестів емоційних станів (Mini-Mult, PHQ-9), HADS тощо).

Результати дослідження. Загалом, правильна оцінка стану пацієнта є критичним елементом у попередженні можливих ускладнень та управлінні наслідками ТІА. Це дозволяє забезпечити швидке і належне медичне втручання, що збільшує шанси на повне відновлення та зменшує ризик довготривалих наслідків. Неправильна оцінка стану пацієнта при транзиторних ішемічних атаках може мати серйозні наслідки, які включають затримку в діагностиці, пропущення важливих симптомів, недостатній нагляд і догляд, неправильне лікування, збільшений ризик повторних судинних подій. У випадку затримки або неправильного лікування можуть залишитися довготривалі функціональні дефіцити. Недостатнє лікування та недостатня медична увага можуть призвести до погіршення якості життя пацієнтів, оскільки вони можуть стикатися з фізичними та психологічними обмеженнями. Неправильна оцінка стану пацієнта може спричинитися до аграваційних наслідків пацієнта та його близьких, збільшити рівень тривоги, індукувати депресивні стани, панічні атаки і страх повторення судинних подій.

Висновки. ТІА слід розглядати та інтерпретувати як важливий передвісник інсульту. Правильна оцінка стану пацієнта може допомогти вчасно виявити ризик інсульту і вжити заходів щодо його запобігання, знизивши ймовірність серйозних ускладнень. Важливе, якщо не вирішальне, значення після ТІА має психологічний супровід як цілісний комплекс профілактичних заходів, що включає: оперативне психодіагностичне обстеження, формування комплаєнсу пацієнта з лікарем, післягоспітальний психологічний моніторинг і супровід, спрямований на загальне оздоровлення психіки та корекцію психічного стану пацієнта, підтримання здорового способу життя та якості життя і, таким чином, профілактику (попередження) можливого інсульту.

Ключові слова: агравація, транзиторна ішемічна атака, психічний стан, психологічний моніторинг, комплаєнс.

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