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Research Article

Medical and social consequences of confusion syndrome that developed in the acute period of ischemic stroke

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ABSTRACT
AIM: To assess the dynamics of cognitive functions in patients in whom the acute period of ischemic stroke was accompanied by the confusion syndrome, in comparison with patients in whom the acute period of stroke was not accompanied by the development of confusion. To assess the impact of clinical features of confusion syndrome on the development of post-stroke cognitive impairment, mortality, and patient care burden.
MATERIALS AND METHODS: The study involved 99 patients, 55 of whom developed severe confusion during the acute period of stroke, and 44 patients whose ischemic stroke was not complicated by the development of confusion syndrome. The groups were homogeneous in terms of the main etiological factors: age, degree of pre-stroke cognitive impairment. The study assessed the impact of the development of confusional syndrome on the outcome.
RESULTS: Confusion syndrome that develops in the acute period of ischemic stroke significantly increases the risk of developing or worsening existing cognitive impairment, mortality, dependence on care, and the burden on caregivers.
CONCLUSION: Being a serious complication, confusion syndrome requires monitoring of qualitative and quantitative indicators of consciousness in the acute period of ischemic stroke, prevention and, if detected, immediate correction of confusion syndrome.

Keywords: cognition disorders; confusion syndrome; delirium; dementia; ischemic stroke; mortality; nurse.

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Научная статья

Медицинские и социальные последствия синдрома спутанности сознания, развившегося в остром периоде ишемического инсульта

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АННОТАЦИЯ
Цель. Провести оценку динамики когнитивных функций у пациентов, у которых острый период ишемического инсульта сопровождался развитием синдрома спутанности сознания, в сравнении с пациентами, у которых тот же период не сопровождался развитием этого синдрома. Изучить влияние клинических особенностей синдрома спутанности сознания на развитие постинсультных когнитивных нарушений, смертность, нагрузку по уходу за пациентами.
Материалы и методы. В исследовании приняли участие 99 пациентов, у 55 из которых в остром периоде инсульта развилась выраженная спутанность сознания, а у 44 пациентов ишемический инсульт не осложнялся развитием этого синдрома. Группы были однородны по основным этиологическим показателям: полу, возрасту, степени доинсультных когнитивных нарушений. В ходе исследования проведена оценка влияния развития синдрома спутанности сознания на исход заболевания.
Результаты. Синдром спутанности сознания, развившийся в остром периоде ишемического инсульта, значимо повышает риск развития или усугубления имеющихся когнитивных нарушений, смертности, зависимость от ухода и нагрузку на лиц, ухаживающих за пациентом.
Заключение. Являясь серьезным осложнением, синдром спутанности сознания требует проведения мониторинга количественных и качественных показателей уровня сознания в остром периоде ишемического инсульта, профилактики и, при выявлении, незамедлительной коррекции этого синдрома.

Ключевые слова: делирий; деменция; ишемический инсульт; когнитивные нарушения; синдром спутанности сознания; смертность; уход.

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ЭКО•ВЕКТОР

BACKGROUND

Poststroke confusion syndrome is a common and severe complication that occurs in the acute phase of ischemic stroke. It hinders the initiation of rehabilitation, prolongs the hospital stay, burdens the staff, worsens the functional outcome, and increases the incidence of complications and mortality. Its frequency ranges from 10%–48% according to several sources [1–6].

The CAM, CAM-ICU, and 4-AT scales are straightforward and dependable tools for identifying confusion, and they can be applied in routine medical practice by physicians of any specialty. Furthermore, trained nurses can use the CAM and CAM-ICU scales [7]. The assessment experience is also applicable to neurology in cases of prolonged unconsciousness and stroke [8].

Research in this area often centers on studying etiological factors, consequences, and medication interventions while neglecting the examination of the burden on caregivers following hospital discharge [9, 10]. Their findings frequently contain inconsistencies, and the research design has some notable limitations. Specifically, data revealed the correlation between the onset of confusion syndrome during the acute phase of ischemic stroke and ensuing cognitive decline. Nonetheless, this correlation remains inadequately understood because studies do not consistently consider patient age or the effect of prestroke cognitive impairment on disease prognosis [11, 12].

MATERIALS AND METHODS

The study comprised 99 participants aged 67–78 years diagnosed with ischemic stroke, consisting of 63 men (63.6%) and 36 women (36.4%). Of these participants, 55 (33 men and 22 women) exhibited marked confusion during the acute phase of stroke (study group), whereas 44 (30 men and 14 women) had not experienced confusion (control group).

Age and level of cognitive impairment did not significantly differ between the study and control groups ($p > 0.05$).

All patients underwent a comprehensive clinical and neurological evaluation, which comprised collection of complaints, medical history review, neurological status assessment, consciousness qualitative appraisal, cognitive status evaluation, and psychometric testing. Cognitive functions were assessed within the post-acute phase of stroke while ensuring clear consciousness. The diagnosis of confusion syndrome was made using the confusion assessment method, whereas the severity and dynamics of the confusion were evaluated using the delirium rating scale [13–15].

The study group comprised individuals who experienced severe confusion lasting over 24 h during the acute period of stroke, as indicated by a delirium rating scale score of 12.

All patients underwent neuropsychological testing to assess cognitive functions during hospitalization and at 3, 6, and 18 months after discharge, including the brief mental status scale, a battery of tests to assess frontal dysfunction, a clock drawing test, and a five-word memorization test [16–19].

The study used the cognitive function status questionnaire for elderly relatives to evaluate cognitive impairment before stroke to rule out anxiety and depression disorders, as assessed by the hospital anxiety and depression scale [20, 21]. The patient assistant burden scale was implemented to gauge the burden on the patient's relatives [22].

RESULTS AND DISCUSSION

The assessment of the cognitive status of patients in the study and control groups during hospitalization revealed the following data:

In the brief mental status scale, the study group scored 22 (range, 21–25) points, whereas the control group scored 26 (range, 25–28) points ($p < 0.001$).

In the battery of tests assessing frontal dysfunction, the study group scored 12 (range, 12–13) points, whereas the control group scored 16 (range, 15–17) points ($p < 0.001$).

On the clock drawing test, the study group scored 7 (range, 6–8) points, whereas the control group scored 7 (range, 7–7) points.

On the test of memorizing five words, the study group scored 7 (range, 6–8) points, whereas the control group scored 8 (range, 6–9) points. However, no statistically significant differences ($p > 0.05$) were observed.

Cognitive function was evaluated 3, 6, and 18 months after hospital discharge.

The brief mental status scale scores were as follows: After 3 months, the study group scored 22 (range, 20–24) points, whereas the control group scored 26 (range, 25–28) points. After 6 months, the study group scored 21 (range, 19–23) points, whereas the control group scored 25 (range, 24–27) points. After 18 months, the study group scored 21 (range, 19–23) points, whereas the control group scored 25 (range, 23–26) points.

The results of the battery of tests assessing frontal dysfunction were as follows: After 3 months, the study group scored 12 (range, 11–13) points, whereas the control group scored 16 (range, 15–17) points. After 6 months, the study group had a score of 11 (range, 11–12) points, whereas the control group scored 15 (range, 15–16) points. After 18 months, the study group showed 10 (range, 10–11) points, whereas the control group showed 15 (range, 14–16) points.

The scores on the five-word memorization test were as follows: After 3 months, the study group scored 6 (range, 5–7) points compared with the control group that scored 7 (range, 5–8) points. After 6 months, the study group scored 6 (range, 5–7) points, whereas the control group scored 7 (range, 5–8) points. After 18 months, the study group scored 5 (range, 4–7) points, whereas the control group scored 6 (range, 4–7) points.

The results of the clock drawing test were as follows: After 3 months, the study group scored 6 (range, 6–7) points, whereas the control group scored 7 (range, 5–8) points. After 6 months, the study group had 6 (range, 5–7) points, whereas the control group had 7 (range, 5–8) points. After 18 months, the study group scored 5 (range, 5–7) points, whereas the control group scored 6 (range, 5–7) points.

Although no differences were found in prestroke cognitive impairment, cognitive deficits were more significant in patients who experienced confusion during the acute period of stroke ($p < 0.05$), based on the results of the brief mental status scale and the battery of tests assessing frontal dysfunction throughout the follow-up period. No significant differences were found in the results of the five-word memory test and the clock drawing test during the follow-up period.

According to the patient assistant burden scale conducted 3 months later, the study group scored 35 (range, 30–64) points, whereas the control group scored 33 (range, 24–38) points. After 6 months, the study group scored 41 (range, 35–67) points, whereas the control group scored 35.5 (range, 25–43) points. Finally, after 18 months, the study group scored 39 (range, 34–70) points, whereas the control group scored 37.5 (range, 27.5–44) points. The patient assistant burden scale scores revealed a significantly higher burden in the group of patients experiencing confusion than in those without it at 3, 6 ($p < 0.01$), and 18 months ($p < 0.05$).

During the follow-up period, mortality rates were significantly higher in the study group ($n = 25$; 45.5%) than in the control group ($n = 12$; 27.3%) ($p < 0.001$).

CONCLUSIONS

The high incidence of poststroke cognitive impairment underscores the significance of identifying its long-term effects, which hinder patients' day-to-day functioning and social adjustment and pose a severe burden on care providers, leading to higher mortality rates. These issues directly influence the physical health, emotional well-being, and financial stability of caregivers.

Monitoring quantitative and qualitative measures of consciousness, timely identification and exclusion of instigating factors, and implementing a comprehensive range of therapeutic and preventive measures, such as adequate sedation and analgesia, correction of infectious and metabolic complications, early mobilization, normalization of the sleep–wake cycle, orientation in space and time, and increasing contact with loved ones, can reduce the incidence of confusion syndrome and, in the event of its development, increase the effectiveness of therapeutic interventions, ultimately reducing the burden of social consequences.

ADDITIONAL INFORMATION

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Conflict of interest. The authors declare no obvious and potential conflicts of interest related to the publication of this article.

Ethical review. The study was approved by the local ethical committee of the Kirov Military Medical Academy (Protocol No. 94 of 07/07/2009).

Author contributions. All authors made a significant contribution to the study and preparation of the article and read and approved the final version before publication.

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