

Application of Alteplase in the therapeutic window of stroke in the course of cardiomyopathy.



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ABSTRACT

Stroke is a threat to the health and life of the patient. Only early diagnosis and treatment in the so-called therapeutic window, enable effective help. This case represents an untreated 65-year-old man who suffered an acute stroke and was in a severe condition with full aphasia and hemiparesis transmitted by a medical emergency team in the emergency room of a hospital with a peripheral unit. Reliable intelligence at the scene, rapid transport to a dedicated treatment center, early imaging diagnostics and implemented thrombolytic therapy within 4.5 hours after the onset of symptoms, allowed to obtain a satisfactory final effect, despite co-existing cardiomyopathy.

KEY WORDS: stroke, thrombolysis, therapeutic window, history, atrial fibrillation.

INTRODUCTION

On October 31, 2016, after 22:00, the medical dispatcher of the Grodzisk Mazowiecki operating area received a call for a sudden collapse of a man aged 65 years. At the place of the accident, being the place of residence of the victim, a specialist Emergency Medical Service (EMS) was ordered.

Proceedings of the Emergency Medical Service

After arriving at the scene, the patient was found lying down. During the initial assessment, in the four-level consciousness scale, the AVPU was rated A (Alert - conscious), in the assessment of ABC's vital functions, the patency of the airways preserved, the breath and the current heart rate. Due to the lack of logical contact with the patient, the SAMPLE rescue interview was collected from the witness of the event, which was the wife. Information was received that the man had not been cured for anything so far, and the collapse occurred suddenly at 22:15, when the patient was returning from the basement. In the detailed physical examination it was found: the level of consciousness on the GCS scale = 12 points; number of breaths RR = 16 / minute; SpO₂ saturation = 89%; auscultation over the pulmonary fields suspicion of small-volume stagnation; heart rate HR = around 100 / minute; blood pressure NiBP = 190/100 mmHg; blood glucose level with capillary blood = 195 mg / dl; hemisphere hemiparesis. The FAST scales were used to assess the neurological deficit. Passive oxygen therapy was implemented, the venous line was secured and urgent transport was made to the nearest hospital with a stroke unit in Pruszków. As a preliminary diagnosis, the suspicion of a stroke was indicated (ICD code: I64).

Diagnosis in the Reception Room

Patient at the admission in the general severe condition, showing the features of resting dyspnoea, conscious, without verbal-logical contact with total aphasia and right leg extremity. In ECG, HR tachycardia = around 120 / minute; NiPP = 180/113 mmHg; SpO₂ = 87% without oxygen, during SpO₂ oxygen therapy = 94%. Auscultation of furrows over the pulmonary fields. An internal and anaesthesiological consultation was performed to prepare for urgent computed tomography (CT), during which pharmacological sedation was necessary as the patient exhibited strong movement artifacts. Betaloc 2.5 mg i.v. to relieve heart

activity. In the internal examination, the abdomen is soft, painless, without peripheral edema, the patient is neglected, stained with feces. In neurological examination, conscious, hypopneal, without plaque symptoms, equal pupils, left eyeballs, smooth right nasopharyngeal folds, suspicion of right-sided hemorrhage without other changes in cranial nerves, Babinski's sign positive on the right side, hypoesthesia right-sided with possible right-sided neglect. On the impact scale of the National Institutes of Health (NIHSS), the patient received a total of 23 points, and the CT study did not reveal the fresh features of CNS damage. At 00:32 on 1 November 2016, he was transferred from the Admissions Room to the Stroke Department of that hospital.

TREATMENT

After exclusion of contraindications, the patient was given thrombolytic therapy (Actylise) without complications. Due to radiological and clinical features of pneumonia, the patient received antibiotics (Augmentin i.v.). A carotid ultrasound examination was performed, but due to the unclearness of the obtained result, angiography was additionally performed for certainty. Cardiac consultation in the initial stage of hospitalization showed pericardial fluid, therefore cardiomyopathy was suspected. On November 8, 2016, the CT scan of the head without contrast agent showed the organization of ischemic changes in the left hemisphere of the brain in the left temporomandibular region without evident hemorrhagic lesions within the local subarachnoid space. Attention was drawn to the marginal, meandering increase in the density of local furrows and bends of the cerebrum of the parietal and temporal lobes of the left and cortical atrophy of the brain.

During the hospitalization, anticoagulant therapy was added, which has been postponed for four weeks due to the bleeding of the extensive ischemic focus in the brain. Physiotherapy and speech therapy were also carried out, recording systematic improvement. The final descriptive diagnosis revealed ischemic stroke of the left hemisphere of the brain, arterial hypertension, paroxysmal atrial fibrillation, cardiomyopathy and hepatopathy most probably on the alcoholic background. Pharmacological treatment was recommended: Warfin, Tritace, Bisocard, Furosemid, Kalipod, Atoris. On 9 December 2016, the patient was discharged walking alone, with discreet paresis of the right limbs, middle-degree aphasia and slight dysarthria, Dupuytren's contractures of V and IV fingers in the right and third limb in the left limb. Scoring on Rankin scale = 3 points, Barthel = 90 points, NIHSS = 5 points.

DISCUSSION

Stroke is a disease that is a threat to human health and life, which is why it requires rapid diagnosis and therapy. The most common form (about 80% of cases) is ischemic stroke requiring urgent qualification for specific treatment with recombinant tissue activator Alteplaza plasmusogen (alteplase) (r-tpa) [1]. The key is the time to implement the procedure, which should not occur later than 4.5 hours from the first symptoms.

Neurological symptoms of stroke are very often related to the limitation of the patient's state of consciousness, therefore the first disturbing signs should be noted by the witnesses of the event. It is necessary to make the public aware of the typical symptoms of stroke, which should be diagnosed early. These include: sudden muscle weakness, slurred speech, difficulty walking, blurred vision, headache, disturbed consciousness [2]. A witness who sees similar symptoms should immediately call an ambulance and provide first aid. The Emergency Medical Team should immediately assess the condition of the patient, provide medical emergency procedures and collect a detailed medical history, focusing, among other things, on determining the exact time of the first symptoms [3]. The head of the EMS in the described case followed the guidelines of the American Stroke Association (Table 1). Suspecting a stroke, urgent transport to a treatment center with a ward or subunit is recommended, because only rapid imaging diagnostics and therapy carried out in the so-called the therapeutic window results in improved survival and reduced complications [4].

The task of the emergency room doctor / physician is to collect an interview from the head of the EMS, protect the patient's vital functions, order tests and quickly direct him to the final department. The described event presents the correct medical procedure minimizing the time delay, as evidenced by the transfer of the patient, with necessary laboratory tests and Computer Tomography (CT), to the Intensive Neurological Survey rooms for intravenous thrombolytic therapy about 2.5 hours after the onset of symptoms. It should be remembered that patients showing some neurological symptoms resulting from cerebral circulation disorders, in the first hours may have invisible cerebral lesions in CT.

Table 1. Clinical evaluation and pre-hospital treatment in case of a patient with suspected recent stroke

Recommended	Not recommended
evaluate the patient's condition in accordance with the ABC scheme (airway patency, respiratory function, cardiac performance) and, if necessary, apply appropriate treatment	do not give antihypertensive drugs for hypertension if they have not been ordered by a doctor
start monitoring of the heart performance	
give oxygen to keep arterial blood saturation > 94%	
get access to the vein according to the procedure used	do not give too much fluids intravenously
determine the blood glucose level and use the treatment depending on the result	do not give glucose-containing fluids to patients without hypoglycaemia do not give medicines orally (you may not receive anything by mouth)
specify the time of onset of symptoms or the time when the patient was last seen without symptoms; get contact details of a family member (preferably a mobile phone number)	
specify the priority and transfer the patient to the nearest and most appropriate hospital dealing with stroke treatment as soon as possible	do not delay transport to the hospital due to pre-hospital interventions
inform the hospital about the transport of a stroke patient	

Source: www.mp.pl, Guidelines for early management of ischemic stroke developed by the American Heart Association and the American Stroke Association for doctors and other healthcare professionals.

Actylise treatment is widely used, because it has proven effectiveness and does not even cause a change in the level of nitric oxide metabolites in the serum [5]. In our patient, thrombolysis was without complications, and the physician could further deepen the internist and cardiac diagnostics. The conclusion from the consultations and examinations made it possible to indicate cardiomyopathy and paroxysmal atrial fibrillation as an implied cause of stroke. Medical literature indicates atrial fibrillation as a disease that increases the risk of an acute cerebral infarction five Times [6].

After 39 days of hospitalization, the patient was discharged with moderate disability, but as a patient walking alone and with a slight dysarthria NIHSS 5pkt, mRS 1pkt. Oral pharmacotherapy has been proposed for the diagnosis, including the anticoagulant (Warfin), which is an effective antithrombotic prophylaxis for stroke in patients with atrial fibrillation [7]. Due to rapid on-site intervention and hospital therapy, the fatal outcome of extensive middle-aged men with stroke has been avoided. even regression of symptoms was achieved, allowing the patient to leave the hospital on his own.

At present, the reorganization of stroke units allows to shorten the time to administration of the drug (door to needle) thanks to administering a bolus with the drug already in the computed tomography laboratory.

Disclosure statement

No potential conflict of interest was reported by the author's.

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