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STROKE MIMICS: A PSYCHOGENIC STROKE PATIENT TREATED WITH ALTEPLASE

Dariusz Kotłęga^{1,2(A,B,D,E,F)}, Barbara Peda^{2(A,B,D,E,F)},
Tomasz Trochanowski^{2(B,E,F)}, Monika Gołąb-Janowska^{1(B,E,F)},
Sylwester Ciećwież^{3(B,E,F)}, Przemysław Nowacki^{1(B,D,E,F)}

¹ Department of Neurology, Pomeranian Medical University, Szczecin, Poland

² Department of Neurology, District Hospital, Głogów, Poland

³ Department of Gynaecology and Urogynaecology, Pomeranian Medical University, Szczecin, Poland

Background:

For rtPA treatment to be effective it should be initiated within the first 4.5 hours following the onset of a stroke. Such a short therapeutic window demands a rapid diagnosis and decision making on the part of the physician. There are patients with stroke-like symptoms and an initial diagnosis of a stroke, but who are finally diagnosed as suffering from another condition. According to the subject literature, stroke mimics are diagnosed in about 1.4 – 3.5% of patients initially diagnosed as having had an ischemic stroke. Psychogenic strokes (conversion disorders) may be found in as many as 8.2% of stroke patients. Proper diagnosis is especially important in patients eligible for thrombolytic treatment when there is usually not enough time to establish the diagnosis of a stroke mimic, especially one of psychogenic origin.

Case study:

A patient with an initial diagnosis of an ischemic stroke who was treated with intravenous alteplase infusion. The previous two ischemic strokes treated in the same manner had been diagnosed one and two years earlier. In all hospitalizations no rtPA treatment complications had been observed. In our patient a proper neuropsychological examination was performed and a conversion disorder diagnosed.

Conclusions:

We would like to underline the importance of cooperation between the neuropsychologist and neurology physician within clinical practice.

Key words: cerebral ischemia, infarction, hemiparesis, psychosomatic disorders, tissue plasminogen activator

SUMMARY

INTRODUCTION

For rtPA treatment to be effective it should be initiated within the first 4.5 hours following the onset of a stroke. Such a short therapeutic window demands a rapid diagnosis and decision making on the part of the physician. There are patients with stroke-like symptoms and an initial diagnosis of a stroke, who are finally diagnosed as suffering from another condition. According to the subject literature, stroke mimics are diagnosed in about 1.4 – 3.5% of patients initially diagnosed as having had an ischemic stroke [Winkler, 2009; Arto, 2012; Brunser, 2013]. Other studies demonstrate that even as many as 10.4 to 16.6% of thrombolysed stroke patients may have had a stroke mimic [Caruso, 2016; Kvistad, 2018]. The most common causes of stroke mimics are toxic metabolic encephalopathies (30.1%), seizures (19.5%), migraine (10.6%), neuroinfections (9.7%), peripheral vertigo (6.2%), conversion disorder (4.4%) and brain tumors (3.6%) [Brunser, 2013]. In rt-PA treated patients the distribution of stroke mimics causes may differ: seizures (38%), migraine (37%), conversion disorder (21%) [Chernyshev, 2010].

We would like to concentrate on psychogenic strokes (conversion disorders) that may be found in even 8.2% of stroke patients [Wilkins, 2018]. The conversion disorder mimicking an ischemic stroke is present in a significant percentage of mimics. Proper diagnosis is especially important in patients eligible for thrombolytic treatment when there is usually not enough time to establish the diagnosis of the stroke mimic, especially one of psychogenic origin. The potential hemorrhagic complications of such treatment may be life-threatening or disabling, but observational studies show that rt-PA treatment in patients with stroke mimics is usually safe [Chernyshev, 2010; Chen, 2011]. Despite the risk of unnecessary treatment, the costs of such a condition are also discussed [see: Goyal, 2015].

CASE REPORT

A 33-year-old female patient was admitted to the Neurology Department due to complaints of vertigo. On the day of admission she was suffering from a speech disorder and right side limb weakness. Her medical history included records of ischemic strokes with right hemiparesis and aphasia one and two years before at other hospital, where she received intravenous alteplase treatment and a complete resolution of symptoms. Moreover the patient had suffered from a fracture of the left tibia and peroneal bone with subsequent orthopedic surgery and a screw placed inside. She was also addicted to alcohol and smoking. She had tried alcohol addiction treatment but had relapsed.

On admission slight motoric dysphasia was observed and right hemiparesis – deep weakness in the upper limb and moderate in the lower. Given the criteria, intravenous alteplase infusion (66mg) was administered. Her speech improved completely directly after the infusion while the muscle weakness decreased reaching a moderate level (MRCP 4/5). No treatment complications were observed. Over the following 10 days a slight muscle weakness was observed but

this gradually resolved itself completely. During hospitalization, the orthopedic device was removed from the left lower limb to enable brain MRI scanning. She also had a psychotherapy sessions during her stay.

ADDITIONAL TEST RESULTS

Initial and control brain CT were normal. The further MRI scan was completely normal. Additional tests were performed – slight dyslipidemia was observed, other tests were within the normal range (24 hours ECG, heart ultrasonography, carotid ultrasound, protein C, protein S, Leiden gene mutation, ANA, anticardiolipin antibodies, anti beta2-glicoprotein-1 antibodies, c-ANCA, p-ANCA).

Neuropsychological assessment

Neuropsychological examination showed no cognitive deficits. She had slight motoric problems with articulation and non-fluent speech that quickly disappeared. There was no difficulties with word recall, understanding speech, reading or writing. Personality tests showed increased anxiety, impaired adaptability, low tolerance of stressful situations. Frustration with her life situation, the feel of not being involved in and an absence of power were conducted episodes of decompensation in her mental health

Our patient displayed features of histrionic personality. The processes of internal control were poorly integrated. She used emergency methods in solving problems that had deepened her insulation and dissociation between thoughts, feelings and behaviours. The patient widely used denial as a defense mechanism and did not integrate various experience in one consistent self-image, therefore she was constantly vulnerable to dissociation in response to increased stress. When her life problems were intensified she usually, in a vicious circle mechanism, looked for emergency relief in alcohol abuse, that even more shallowed her introspection. Alcohol had a relatively fast, toning influence on her own feelings, alleviated unpleasant emotions and activated pleasure, and was used to distract her from serious life problems and allowed her a means of escape from the feeling of emptiness. Periodically, she maintained short-lived abstinence and benefitted from alcohol addiction therapy, but her limited range of interests and the lack of alternative compensation capabilities for rebound suppressed tension, favored experiencing high emotional tension.

The Minnesota Multiphasic Personality Inventory-2 (MMPI-2) showed the patient's tendency to express emotional problems through somatic and conversion symptoms (Hypochondriasis Scale =63, Hysteria Scale=73), a tendency to react with anxiety and problems with emotional control.

DISCUSSION

The clinical picture of conversion disorders (functional neurological symptom disorder according to the DSM-5 classification) is very diverse, rich in numerous manifestationsimitating somatic and neurological illnesses, drawing attention to

intensity, dramatics, urgency of appearance and variability. The most common symptoms are paresis, paralysis, dysaesthesia, visual disturbance (e.g. double vision – diplopia or blindness), hearing disorders, non-epileptic seizures, voice loss (aphonia), articulation disorders, stammer, gait disturbance, astasia-abasia, camptocormia (incorrect bend trunk), esophageal spasms, stupors, fugue, amnesia, multiple and alternating personality. The symptoms are closely associated with emotionally difficult events or problems that in the person mind are unsolvable and intolerable circumstances [American Psychiatric Association, 2013; WHO, 2010].

We present a case report of a patient with an initial diagnosis of having had an ischemic stroke that was treated with the intravenous alteplase infusion. The previous two episodes mimicking the ischemic strokes had also been treated in the same manner and were diagnosed one and two years earlier. Fortunately, in all hospitalizations no complications of rtPA treatment were observed especially including the intracerebral hemorrhage. During previous strokes the MRI was contraindicated as a result of orthopedic device implantation. We conducted a brain MRI scan, the results of which were normal. In our patient a proper neuropsychological examination was performed and conversion disorder diagnosed.

In the available data, rt-PA use in stroke mimics seems to be safe with various alternative diagnoses presented. There was a case report of a patient with 3 episodes of left hemiparesis, though alteplase was used only during the third episode and here without any complications. Finally the patient was diagnosed with a conversion disorder [Segal, 2012]. Despite the somatoform disturbances, other causes of stroke mimics in rt-PA treated patients were also diagnosed such as seizures, migraine, Bells' palsy, tumor, benign paroxysmal positional vertigo, alcohol intoxication, myocardial infarction, drug toxicity, hypoglycemia, syncope, sepsis, dementia, spinal cord lesion, neuroinfection, heat stroke, demyelinating disease, brachial plexopathy, sinusitis, amaurosis fugax, rheumatoid arthritis, appendicitis. Only in one case of seizures and one patient with a brain tumor was post rt-PA thrombolytic conversion observed. In the rest of the above listed causes no complications were observed [Winkler, 2009; Artto, 2012; Chernyshev, 2010; Chen, 2011; Nguyen, 2015]. The percentage of hemorrhagic transformation is 1% in stroke mimics and 7.9% for real strokes. No fatal cases were observed in stroke mimics treated with rt-PA [Zinkstok, 2013].

Differential diagnosis is often difficult, requires experience and cooperation between the neurologist and neuropsychologist. Diagnosis should not be determined on the basis of exclusion, but should include a neuropsychological analysis of the situation in which the patient found himself, his personality traits, the nature of the trauma and internal conflict, the circumstances of the onset of symptoms and their dynamics [Pačhalska, Kaczmarek & Kropotov 2014].

Patients with histrionic personality traits often develop quick relief of symptoms but also recurrences can appear [Millon, 2005].

Patients with stroke mimics are usually younger, more often female, have a lower initial score on the NIHSS scale, lower systolic blood pressure, have fewer

risk factors except for smoking and previous stroke or transient ischemic attacks, are less likely to suffer from hypertension with the predominant clinical symptom being aphasia [Brunser, 2013; Kvistad, 2018; Zinkstok, 2013]. The psychogenic stroke is more commonly observed in women, a history of mental disorders or psychiatric treatment may be observed, neurological disorders may be observed in relatives, as well as professional healthcare worker [Caruso, 2016].

Our report represents the essential problem in neurological practice. The decision as to rt-PA application must be taken as soon as possible, eventually within 4.5 hours from the onset of symptoms, and in practice earlier as a result of diagnostic procedures. Hence, misconstrued decisions may be taken. Differentiation between the organic versus the psychogenic origin of the manifested signs and symptoms often remains during the initial phase of a stroke extremely difficult.

CONCLUSIONS

We would like to underline the importance of cooperation between the neuropsychologist and neurology physician within clinical practice.

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Corresponding author:

Dariusz Kotłęga

Department of Neurology, Pomeranian Medical University in Szczecin,

Unii Lubelskiej 1, 71-252 Szczecin, Poland

e-mail: dkotlega@poczta.onet.pl