

GENÇ HASTADA İNME

Stroke in a Young Patient

Suphi BAHADIRLI¹, Ulaş KARAOĞLU¹, Aydın SARIHAN², Mehtap BULUT¹

ÖZET

İnme, dünyadaki önemli morbidite ve mortaliteye neden olan ikinci önemli nedendir. Bununla birlikte akut iskemik ataklar pediatrik ve genç yaş gruplarında çok nadirdir (% 5-10). Bu olguda, genç yetişkinlerde ve pediatrik hastalarda inmenin akılda tutulması gerektiğine dikkati çekmeyi amaçladık.

15 yaşında erkek hasta acil servise başın sol tarafında ciddi akut baş ağrısı şikayetiyle başvurdu. Yaşamsal belirtiler normaldi. Fiziki muayenesinde Sağ hemiparezi mevcuttu. BT bulguları normaldi. Difüzyon MRG'da akut enfarktüs tespit edildi. Akut inme tanısı ile pediatrik nöroloji servisine başvurdu.

Çocukluk çağı inmeleri ihmal edilmiş bir alandır, hem profesyoneller hem de genel halk problemin ve bunun potansiyel sonuçlarının farkında değildir.

Anahtar Sözcükler: İnme; Pediatri; Akut iskemi; Baş ağrısı

ABSTRACT

Stroke is the second leading cause of major morbidity and mortality in the world. However, acute ischemic attacks are very rare in the pediatric and young age groups (5-10%). In this case we aimed to take attention to stroke must kept in mind in young adults and pediatric patients.

A 15-year-old male patient presented to the emergency department with a severe acute headache in the left side of the head. Vital signs were normal. Right hemiparesis present in physical examination. CT findings were normal. On the diffusion MRI acute infarction was detected. He was admitted to pediatric neurology service with acute stroke diagnosis.

Childhood stroke is a neglected area, with both professionals and the general public lacking awareness of the problem and its potential consequences.

Keywords: Stroke; Pediatric; Acute ischemia; Headache

¹Istanbul Medipol Üniversitesi
Acil Tıp Kliniği

²Manisa Devlet Hastanesi Acil Servis

Suphi BAHADIRLI,
Ulaş KARAOĞLU,
Aydın SARIHAN,
Mehtap BULUT,

İletişim:

Suphi BAHADIRLI,
İstanbul Medipol Üniversitesi
Acil Tıp Kliniği

Tel: 0505 812 43 53

e-mail:

drsuphibahadirli@gmail.com

Geliş tarihi/Received: : 05.10.2017

Kabul tarihi/Accepted: 20.03.2018

DOI: 10.16919/bozoktip.340480

Bozok Tıp Derg 2018;8(2):108-11
Bozok Med J 2018;8(2):108-11

INTRODUCTION

Stroke is the second leading cause of major morbidity and mortality in the world. However, acute ischemic attacks are very rare in the pediatric and young age groups(5-10%). The most common causes of stroke in children and young people are cardioembolism (generally related to a congenital heart disease), cervicocephalic artery dissections, focal arteriopathies of the children, sickle cell anemia and some genetic and metabolic disorders. In addition Moyamoya disease, rheumatic heart diseases and pituitary apoplexy are other rare causes reported in the literature. However in 10-30% of the cases, the cause is unknown. In this case we aimed to take attention to stroke must kept in mind in young adults and pediatric patients.

CASE

A 15-year-old male patient with no risk factors presented to the emergency department with a severe acute headache in the left side of the head. He said that he has never had an ache like this before. His complaints started while he was lying down about 15 minutes before admission. When he tried to stand up, he had weakness at his right side and he fell on the ground. He had difficulty in speaking. He could not feel the right side of his body. There is no special feature in medical and family history.

The patient's vital signs were as follows: Blood Pressure: 122/81 mmHg, Pulse Rate: 76 bpm, sPO2: 99, Body Temperature: 36.2 °C. General condition of the patient was good, he was conscious, cooperate and well-oriented with Glasgow Coma Score of 15. Pupil reflexes are bilateral positive and pupils are isochoric. Physical examination revealed effacement in the right nasolabial sulcus. Muscle strength loss of 3/5 in the right distal, 4/5 in the right proximal upper extremity and 5/5 in the right lower extremity. Pathologic reflexes were absent. Motor examination revealed right hemiparesis. The other organ system physical examinations were within normal limits. Cranial computerized tomography (CT) (Brilliance ICT 256; Philips, Cleveland, USA) obtained was normal. Diffusion magnetic resonance imaging (MRI) (Achieva 3T; Philips, The Netherlands) was subsequently obtained and signs of an acute infarction extending

from the left periventricular area to the putamen and splenium were observed (Figure1).

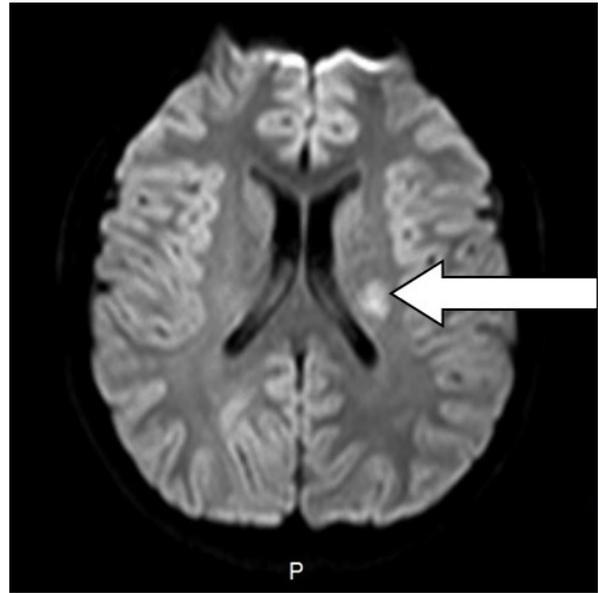


Figure1: Acute İnfarction on Diffusion weighted MRI.

The patient was consulted with the pediatric neurology department and admitted to the ward with the diagnosis of acute ischemic stroke. During his admission hematological (complete blood count, erythrocyte sedimentation rate) and coagulation test values were in normal ranges. Hemoglobine electrophoresis, factor II-VII-VIII-XII, fibrinogen and homosistein levels; anti-trombin III and protein C-S activities, activated protein C resistance, factor V Leiden mutation panel and methylene tetrahydrofolatereductase (MTHFR) gene mutation analysis were normal. Antinuclear antibodies and lupus anticoagulant tests were also negative. Cerebral and vertebral CT angiography, MR angiography were not performed. Carotid and vertebral artery color Doppler USG (HD9 ultrasound system; Philips, The Netherlands) were performed and no pathology was detected. In transthoracic echocardiography (EPIQ 5 ultrasound system; Philips, The Netherlands) (TTE) mild grade aortic insufficiency and mitral regurgitation were detected. It was considered as a result of past acute rheumatic fever and unrelated to the present problem. He was admitted to pediatric neurology service with

acute stroke diagnosis. The patient was follow up and treated for 20 days. He was subsequently enrolled in a physical therapy program at he same time. On discharge, he had 5/5 right hemiparesis and the nasolabial sulcus was minimally effaced.

DISCUSSION

Childhood stroke is a neglected area, with both professionals and the general public lacking awareness of the problem and its potential consequences. Incidence of childhood stroke varies in different studies between 1.3 to 13 per 100.000 children per year. In adult patients approximately 80% of strokes are ischemic but in the pediatric population, ischemic and hemorrhagic stroke each constitutes about 50% of the cases. Ischemic stroke in neonatal and childhood period has a higher incidence among males. Although childhood stroke is uncommon, its disabling long-term sequelae likely result in a larger burden on society than previously estimated (1).

The most common causes of stroke in children and young people are cardio embolism (generally related to a congenital heart disease), hematological disorders, cervicocephalic artery dissections, focal arteriopathies of the children, sickle cell anemia and some genetic and metabolic disorders and infections. For arterial ischemic stroke, the most common underlying conditions are sickle cell disease (SCD) and congenital or acquired heart disease. Despite all these known risk factors, cause can't be determined in 10-30% of the acute strokes. Diagnosis and management of stroke in children can be difficult because of the diversity of underlying risk factors and the absence of a uniform treatment approach (2). The differential diagnosis and evaluation of acute stroke in the pediatric population should be based in the understanding that the probability of a non-atherosclerotic etiology is much higher than in the adult population (3-6).

In the literature, Moyamoya disease and pituitary apoplexy are reported to cause stroke in the case studies. Pituitary apoplexy is a rare event in pediatric patients and may present without classical symptoms. Focal compression may develop and lead to ischemic stroke (7). Moyamoya disease is one of the primary

causes of pediatric ischemic stroke, especially in East Asia (8).

Rheumatic heart disease (RHD) involves damage to the heart valves during episodes of acute rheumatic fever (ARF) after group A streptococcal infection. It is a disease overwhelmingly acquired in childhood among children living in poverty and overcrowded conditions. Serious RHD complications are heart failure, stroke, atrial fibrillation, and endocarditis (9).

Patients with RHD had a higher proportion of poor outcomes compared with patients without RHD and there were significantly statistical differences (10). One study (the Framingham study) investigated the risk of stroke associated with RHD. Stroke risk was increased about 18-fold in both sexes in patients with RHD (11). In this case we performed all hematological and coagulation tests, carotid and vertebral artery color Doppler USG (HD9 ultrasound system; Philips, The Netherlands). Tests were also negative and USG was within normal limits. Cardiac assessment with TTE (EPIQ 5 ultrasound system; Philips, The Netherlands) was performed. We detected aortic insufficiency and mitral valv regurgitation in TTE which was about pre-existing acute rheumatic fever. We think that the cause of stroke in our case is rheumatic heart disease due to rheumatic fever.

The acute medical management of arterial ischemic stroke can be divided into general care measures, measures that aimed the limitation of the extension of ischemic damage and preventing early recurrence. Early multidisciplinary evaluation is vital to prevent complications and plan rehabilitation. If the child is in an acute pediatric neurology ward, he or she is likely to have access to a multidisciplinary team with expertise in pediatric neurology (2).

In this case's acute management; oral intake stopped, intravenous buffered fluid (%5 dextroz, %0.45 NaCl, %0.3 KCl) started. Patient consulted to pediatric neurology and cardiology after first intervention. Aspirin 50 mg tablet per oral was given to the patient with pediatric neurology proposal.

The patient was hospitalized to the pediatric neurology ward. Medical treatment continued in the same way with aspirin 50mg tb per day. Pediatric cardiology added monthly penicillin for acute rheumatic fever prophylaxis.

On the second day of hospitalization, the physical therapy program started. The patient underwent 30 sessions of rehabilitation (whole body) included electrostimulation (20 min), fine motor skills hand exercises, active assisted range of motion(ROM) exercise. After the thirtieth session, he was walking in a balanced way and he was doing all his daily life activities independently.

Even though the general incidence of stroke has decreased, some studies have reported an increase in hospital admissions related to stroke in children and young adults. Although the etiology of acute ischemic stroke in children is different from adults, the current therapeutic approach is based on data obtained from studies conducted on the adult population. This is because there is no sufficient data on the acute treatment and secondary prevention after acute ischemic stroke in the pediatric population. In addition, structural, metabolic and genetic risk factors, requiring more specific treatment, should also be considered in cases of stroke in children and young adults.

Pediatric ischemic stroke is a rare entity with high mortality and morbidity rates and early identification is necessary. Emergency department physicians must consider stroke in child and adolescent age groups with relevant neurologic signs and symptoms. The current therapeutic approach to stroke is based on the data obtained from adult studies but it should be considered that children and young adults may require more specific treatment.

REFERENCES

1. Fullerton HJ, Wu YW, Zhao S, Johnston SC. Risk of stroke in children: ethnic and gender disparities. *Neurology*. 2003;61(2):189–94.
2. Roach ES, Golomb MR, Adams R, Biller J, Daniels S, Deveber G, et al. Management of stroke in infants and children: a scientific statement from a special writing group of the American Heart Association Stroke Council and the Council on Cardiovascular Disease in the Young. *Stroke* 2008;39:2644–91.
3. Ganesan V, Prengler M, McShane MA, Wade AM, Kirkham FJ. Investigation of risk factors in children with arterial ischemic stroke. *Annals of Neurology*. 2003;53(2):167–73.
4. Bernard T, Goldenberg N. Pediatric arterial ischemic stroke. *Hematol Oncol Clin North Am* 2010;24:167–80.
5. MacKay MT, WiznitzerM, Benedict SL, Lee KJ, DeVeber GA, Ganesan V, et al. On behalf of the International Pediatric Stroke Study Group, Arterial Ischemic Stroke Risk Factors: The International Pediatric Stroke Study, *Ann Neuro* 2011;69:130–40.
6. DeVeber G. Risk factors for childhood stroke: little folks have different strokes! *Ann Neurol* 2003; 53:149–50.
7. Rebecca AK, Joshua H, Anthony MB, Fredric BM. Pediatric ischemic stroke from an apoplectic prolactinoma. *Child's Nervous System*, 31(8), 1387-92.
8. Goichiro T, Satoshi I, Nobuhito M. Reversible diffusion weighted imaging hyperintensities during the acute phase of ischemic stroke in pediatric moyamoya disease: a case report. *Child's Nervous System* August 2016, Volume 32, Issue 8, pp 1531–35.
9. Vincent YF H, John RC, Anna PR, Yuejen Z, Kathryn R, Jessica LD, et al. Long-Term Outcomes From Acute Rheumatic Fever and Rheumatic Heart Disease: A Data-Linkage and Survival Analysis Approach. *Circulation*. 2016 Jul 19;134(3):222-32.
10. Deren W, Ming L, Zilong H, Wendan T, Sen L, Shihong Zhang, et al. Features of Acute Ischemic Stroke With Rheumatic Heart Disease in a Hospitalized Chinese Population. *Stroke*. 2012;43:2853-57.
11. Wolf PA, Dawber TR, Thomas Jr HE, Kannel WB. Epidemiologic assessment of chronic atrial fibrillation and risk of stroke: the Framingham study. *Neurology* 1978;28:973–7.