



Acute Cerebral Ischemia in Children Rare Case Related to Anxiety, Treated with Chinese Acupuncture in Dhamar Governarate Yemen

Hadi Mujlli^{1*}, Salah Ali Al Shawki², Mohammed Ali Al Huthi²

¹Thamar Medical College, Thamar University, Dhamar, Yemen

²Internal Medicine Department, Thamar Medical College, Thamar University, Dhamar, Yemen

Email: *dr.hadimujlli@gmail.com, dohuthi@yahoo.com

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Abstract

Acute Ischemic Stroke (AIS) is relatively rare in children, but can lead to significant morbidity and mortality. Focal neurological signs occur in three-quarters of patients, with hemiplegia are the most common for the diagnosis. A case report describes, 10-year-old girl who presented to the emergency department (ED) of our neurological center in Dhamar city 100 km south to Sana'a capital city of Yemen, with the diagnosis of an acute ischemic stroke clinically and documented before and after treatment with drugs, and Chinese Acupuncture. Brain CT confirms the diagnosis. In this case, the main etiology is still unclear in spite of the presence of mild infection and anxiety (as a risk factor in Acute Cerebral Infarction in (ACI) children). Management (Drugs & Chinese Acupuncture) of a child suffering from an acute ischemic stroke should focus on stabilization and transfer to an appropriate facility for specialty care with good improvement.

Subject Areas

Internal Medicine, Pediatrics

Keywords

Cerebral, Ischemia, Children, Psychotherapy, Chinese Acupuncture, ACA, AIS

1. Introduction

AIS most often presents as a focal neurologic deficit. Hemiplegia is the most common focal manifestation, occurring in up to 94% of cases. Acute Ischemic

Stroke (AIS) accounts for about 50% of all strokes in children, in contrast to adults in whom 80% - 85% of all strokes are ischemic [1] [2]. Acute ischemic stroke (AIS) in a pediatric patient is a rare medical emergency with an incidence of only 2 - 3 per 100,000 [3]. In childhood, the ratio between hemorrhagic and ischemic stroke aetiology is equal [4]. Children also have a more diverse and larger number of risk factors for stroke that differ significantly from adults which are predominated by hypertension, diabetes, and atherosclerosis [5] [6].

Cardiac disease is the most common cause of stroke in childhood, accounting for up to a third of all AIS (4 Embolic clots can arise in children with cardiomyopathies, rheumatic heart disease, prosthetic valves, or valvular vegetation from endocarditis [7]. Although stroke has long been recognized as an adult health problem causing substantial morbidity and mortality, it is also an important cause of acquired brain injury in young patients, occurring most commonly in the neonate and throughout childhood [8]. Sickle cell disease (SCD) is a very common cause of pediatric stroke, long-standing cyanotic lesions cause polycythemia and anemia, which both increase the risk of thromboembolism and cerebral infarction [2]. 5% - 12% of children with bacterial meningitis, TB meningitis, and viral encephalitis will have a stroke due to local vasculitis and thrombosis [9]. Cognitive and behavioral sequelae frequently arise with social implications and effects on daily living [10]. The etiologies of stroke in a child are more varied than in adults and are not always due to acute clot formation or hemorrhage. Approximately 20% of children die after an ischemic stroke while more than 50% of those surviving present neurological sequelae, most commonly hemiparesis [11].

Literature on this topic, including the use of anti-thrombotic therapy for children presenting with AIS, is sparse. Studies in the adult population show anti-thrombotic drugs, including aspirin, are effective when administered using recommended guidelines [12].

2. Clinical Methods

Our case report describes a 10-year-old girl who presented to the neurological department in AL-Ryada International hospital with the diagnosis of an acute ischemic lesion through the brain CT in the left frontal area, as shown in **Figure 1**.

History and clinical neurological examination were done and the patient has had a sudden attack of right hemiparesis, the power was 1st degree in the right lower limb and 2nd degree in the right upper limb (sign of lesion in Anterior Cerebral Artery; ACA), hyper-reflexia, hyper-tonia, no any other sign of upper motor neuron lesion except positive Babinski's sign. As shown in **Table 1**.

The improvement after one month therapy with drug and Chinese acupunctures in the power of the right upper and lower limbs reach the fourth degree in upper and lower limb.

Other tests might be necessary, according to the clinical picture. Carotid Doppler and Transthoracic echocardiogram were normal. The lumbar puncture, ECG, CBC, chemistry panel, liver enzymes, cardiac enzymes and urine drug screen were normal, Serum electrolytes also within normal. As shown in **Table 2**.

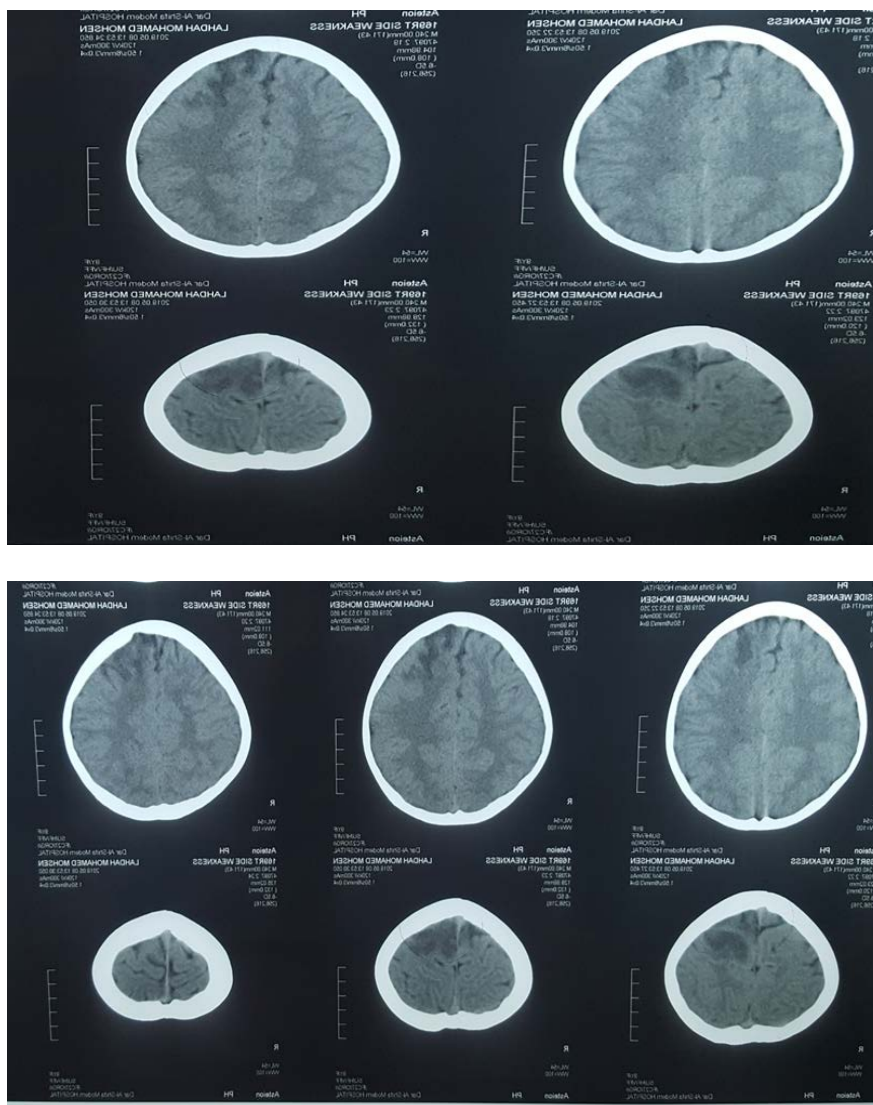


Figure 1. Brain CT scan; watershed infarction lesion in the left fronto-parietal region.

Table 1. Examination of the patient with hemiparesis clinically.

	Rt. UL	Lt. UL	Rt. UL	Lt. UL	Notes
Power	2nd degree	5th degree	1st degree	5th degree	
Tone	Normal	Normal	Normal	Normal	
Reflex	hyper	Normal	hyper	Normal	
Signs of UMNL		=+ve Babinskis			

Table 2. Related investigations were performed according to the common causes of the Acute Cerebral Ischemia clinically in children and results summarized.

	Patient	Normal range
WBC	12,860	10,000 cells/m ³
CRP	132	Up to 5
Protein C	60	70% - 140%
Protein S	75	60% - 150%
Vit. B12	820	187% - 883%
Serum cholesterol	210	250 mg/dl
Serum triglyceride	225	170 mg/dl

3. Discussion

AIS in children is an acute neurologic emergency associated with significant morbidity and mortality [13]. Stroke is relatively rare in children, but can lead to significant morbidity and mortality. Acute Cerebral Ischemia (ACI) in children is typically considered to be a rare event. Acute ischemic strokes in children most commonly occur between the ages of 1 - 5 years and least commonly in the extremes (<1 year and >15 years) [14]. Early recognition of pediatric stroke should lead to more rapid neurological consultation, imaging, treatment, and improved outcomes. Complete blood cell count, iron studies, prothrombin time, partial thromboplastin time, sedimentation rate, and antinuclear antibodies could be useful [15]. Electrocardiogram (ECG) and transthoracic echocardiogram (Echo) are always necessary in all children with known or suspected congenital heart disease who have had a stroke. ACI most often presents as a focal neurologic deficit. Hemiplegia is the most common focal manifestation, occurring in up to 94% of cases. Cerebral vasculitis is a less common cause of stroke in children, and is more common in children older than 14 years of age [11]. Non-contrast computed tomography (CT) can be performed promptly and quickly in emergency. It can adequately exclude hemorrhagic stroke or parenchymal abnormalities that produces a mass effect, and it may reveal a low-density lesion in arterial ischemic stroke and cerebral venous sinus thrombosis. However, CT is usually normal within the first 12 hours after the onset of symptoms [16]. The initial CT scan in children could be falsely negative (may miss diagnosis AIS in up to 50% of patient [17]. The initial neurologic examination of child with possible AIS, the national institutes of health stroke scale was validated for children between 2 - 7 years old [18].

In our case the patient followed for one month in our outpatient clinic, Acute Cerebral Ischemia (ACI) diagnosed clinically by hemiparesis on examination of the patient concerning the power in the right upper and lower limbs as shown in **Table 1**. The diagnosis proved by Brain CT which shows the lesion in the frontal lobe as shown in **Figure 1**. Fear with anxiety or depression play important role

in etiology in this case (some parents may believe in magic and other imagination causes) specially in my country because of war situation.

The investigations result at one month outpatient; follow-up was within normal limit except the presence of mild urinary tract infection, Increase CRP & mild leukocytosis as shown in **Table 2**.

AIS is among the top ten causes of death, with the greater risk in specific sub-population adolescents and infant, patient with sickle cell anemia, black race and male gender. Recent studies underline the importance of infection, it seems that at least a third of cases of childhood stroke occur in such a context. A fifth of the children with ischemic infarction of unknown origin have a history of prior chickenpox. Elevated serum levels of C-reactive protein (CRP) are found in up to three quarters of patients with ischemic stroke [19].

Our patient treated from the 1st day with Mannitol 20% 125 ml BD for 3 days then OD for 4 days, Antibiotic; ceftriaxone 500 mg IV BD, prednisolone pediatric syrup 5 ml TDS were given for 10 days. Also, Aspirin 1 - 5 mg per kg per day for one month (and continue with half dose for prevention), Chinese Acupuncture therapy and psychotherapy for the girl patient and parents. Fortunately, the patient improved well concerning the power of the right upper and lower limbs from the degree 2 improved up to the degree 4, and had only minimal Right Lower limb weakness, patient can walk normal with minimal weakness. The drug & Chinese Acupuncture continue for three months to get nearly complete improvement of hemiparesis. Long-term anticoagulation beyond the acute phase can be provided in the form of antiplatelet agents such as aspirin (be careful of the fetal side effect of Aspirin in children less the 12 years old), clopidogrel, oral vitamin K antagonists like warfarin, or weekly subcutaneous LMWH injections. Anti-platelet drugs are widely used in adults after literature has shown they reduce the rate of strokes. Although randomized controlled trials with children have not been conducted, anti-platelet drugs are used in some centers to reduce the recurrence rate of stroke [20].

4. Conclusions

- Stroke is relatively rare in children, to open the door for more researches concerning the role of anxiety, depression in ACI.
- Chinese Acupuncture 1 - 3 months play a role in treatment of hemiparesis stroke in children.

Conflicts of Interest

The authors declare no conflicts of interest.

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