

Statistics of Pediatric Stroke in Pediatric Hospital at Ain Shams University in Last Five Years

Thesis

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

قالوا

لَسْبِقَانِكَ لَا نَعْلَمُ لَنَا
إِلَّا مَا عَلَّمْتَنَا إِنَّكَ أَنْتَ
الْعَلِيمُ الْعَظِيمُ

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List of Abbreviations

Abb.	Mean
ACCP	American college of chest physicians
ADLs	Activity of daily living
AIS	Acute ischemic stroke
AVM	Arteriovenous malformation
CA	Catheter Angiography
CTA	Computed Tomography Angiography
CVA	cerebral vascular accident
CVT	cerebrovascular thrombosis
HSP	Henoch -schonleinpurpura
ICP	Intracranial pressure
LMWH	Low molecular weight heparin
MRA	Magnetic resonance Arteriography
MRV	Magnetic resonance veography
OT	Occupational therapy
PCP	Phencyclidine
PEG	Percutaneous Endoscopic Gastrostomy
PFO	Patent foramen oval
PT	physical therapy
RCP	Royal college of physicians
rFV a	recombinant factor V a
SAH	Subarachnoid hemorrhage

Abb.	Mean
SCD	Sickle cell disease
SLP	Speech-language pathology
TIA	Transient ischemic attack
tPA	Tissue plasminogen activator
UFH	Unfractionated heparin

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Statistics of Pediatric Stroke in Pediatric Hospital at Ain Shams University in Last Five Years

Abstract

Background: Stroke is a neurological injury caused by the occlusion or rupture of cerebral blood vessels. Stroke can be ischemic, hemorrhagic, or both. Ischemic stroke is more frequently caused by arterial occlusion, but it may also be caused by venous occlusion of cerebral veins or sinuses. Hemorrhagic stroke is the result of bleeding from a ruptured cerebral artery or from bleeding into the site of an acute ischemic stroke (AIS). This retrospective study was conducted in Children's Hospital, in patients aged from more than 1 month till younger than 16 years through revising their admission files and files of patients presented to our Pediatric Neurology Clinic in the past 5 years to identify cases who were presented with stroke. The study showed that the commonest symptoms of the patients of stroke were hemiparesis and seizures (70%), followed by cranial nerve affection (50%), then disturbed conscious level (30%). Regarding radiological investigations; CT was done to 100% of the patients, MRI to 75% of cases while MRA to 65% of them and MRV 25%. Echo was done to 45 % of stroke patients. As a regards the treatment of stroke, our study showed that anticoagulants and anticonvulsants were the most common treatments taken by the patients of ischemic stroke while hemorrhagic stroke patients took only supportive treatment. Further, 40% of the patients received LMWH only, 15% received Aspirin only while 35%received both LMWH +Aspirin.

Keywords: Stroke, AIS: acute ischemic stroke, Neurology, LMWH: Low molecular weight heparin.

Introduction

Stroke is a neurological injury caused by the occlusion or rupture of cerebral blood vessels. Stroke can be ischemic, hemorrhagic, or both. Ischemic stroke is more frequently caused by arterial occlusion, but it may also be caused by venous occlusion of cerebral veins or sinuses. Hemorrhagic stroke is the result of bleeding from a ruptured cerebral artery or from bleeding into the site of an acute ischemic stroke (AIS) (**Tsze et al., 2011**).

Stroke also can occur at all life stages but clinical presentation, pathophysiology and other clinical perspectives are variable depending on the patient's age. While many efforts and clinical trials have been allocated to increase knowledge about adult stroke, pediatric stroke often remains an under-recognized, even among pediatricians, although it is an important cause of lifelong disability with a human and economic impact on families and on the society (**Rosa et al., 2015**).

IN FACT stroke is one of the top 10 causes of death in children, with highest rates in the 1st year of life (**Jeong et al., 2015**).

The annual incidence of childhood ischemic stroke was 1,6 per 100,000 children per year (**Mallick et al., 2014**).

Pediatric stroke leads to significant morbidity and mortality. Roughly 10–25% of children with a stroke will die, up to 25% of children will have a recurrence, and up to 66% will have persistent neurological deficits (most commonly hemiparesis or hemiplegia) or develop subsequent seizure disorders, learning, or developmental problems (**Tsze et al., 2011**).

Therefore, the early appropriate diagnosis and detection of associated risk factors is very important to improve the management and modify the prognosis (**Jeong et al., 2015**).

Aim of the Study

This is a statistical study through revision of files of patients with stroke presented to our pediatric neurology department and clinic to detect:

- Incidence, etiological factors, clinical presentation, investigations, and most applicable protocols for treatment.
- Morbidity and mortality rate.
- To compare these data to the international guide for diagnosis and management of stroke.
- To approve a stroke protocol to be applicable for pediatric neurology clinic.

Stroke

Stroke is a neurological injury caused by the occlusion or rupture of cerebral blood vessels. Stroke can be ischemic, hemorrhagic, or both. Ischemic stroke is more frequently caused by arterial occlusion, but it may also be caused by venous occlusion of cerebral veins or sinuses. Hemorrhagic stroke is the result of bleeding from a ruptured cerebral artery or from bleeding into the site of an acute ischemic stroke (AIS) (**Tsze and Valente, 2011**).

AIS accounts for about half of all strokes in children, in contrast to adults in whom 80–85% of all strokes are ischemic. 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 (**Carvalho and Garg, 2002**).

Pediatric stroke leads to significant morbidity and mortality. Roughly 10–25% of children with a stroke will die, up to 25% of children will have a recurrence, and up to 66% will have persistent neurological deficits or develop subsequent seizure disorders, learning, or developmental problems (**DeVeber, 2005**).

Epidemiology

A stroke or cerebral vascular accident (CVA) in children is typically considered to be a rare event. The reported incidence of combined ischemic and hemorrhagic pediatric stroke ranges from 1.2 to 13 cases per 100,000 children under 18 years of age (**Zahuranec et al., 2005**).

However, pediatric stroke is likely more common than we may realize since it is thought to be frequently undiagnosed or misdiagnosed. This may be due to a variety of factors including a low level of suspicion by the clinician and patients who present with subtle symptoms that mimic other diseases. This, in turn, can lead to a delay in the diagnosis of stroke. In one report, 19 out of 45 children with a stroke did not receive a correct diagnosis until 15 hours to 3 months after initial presentation (**Braun et al., 2006**).

Gabis et al. (2002) demonstrated up to a 28-hour delay in seeking medical attention from the onset of symptoms and a 7.2-hour average delay after presentation before any brain imaging was done. However, the reported incidence of pediatric stroke has more than doubled from prior decade estimates. This may be due to a combination of increased survival in children with risk factors for stroke,