Diagnosis and Management of Acute Stroke

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Outlines of this Talk

• Definitions
  – Stroke
  – TIA

• Types of stroke:
  – Ischaemic, Haemorrhagic (ICH, SAH), Venous strokes, Spinal Cord Stroke

• Diagnosis of Acute stroke (FAST, AVVV)
  – History – Clinical examinations - Imaging

• Identification of Stroke Risk Factors:
  – Modifiable: Hypertension High (BP), AF, DM, Dylip,
  – Imaging in acute stroke

• Management of Ischaemic Stroke
  – Monitoring (Stroke Unit, ICU, A & E ward)
  – BP management during General Care (IP or OPD)
  – Thrombolytic therapy (tPA)
  – Endovascular Clot retrieval techniques

• Management of Haemorrhagic stroke
  – ICH, SAH

• Neurosurgical Interventions in stroke:
  – Decompressive Craniectomy / open aneurysmal clipping / EVD for complications

• Rehabilitation in Acute Stoke

• Stroke Mimics and Stroke Chameleons
Stroke: definition

“Rapidly developing clinical signs of focal (or global) disturbance of cerebral, spinal or retinal function with symptoms **lasting 24 hours** or longer or leading to death with no apparent cause other than that of vascular origin”.

**Silent stroke** — radiological or pathological evidence of an infarction or haemorrhage not caused by trauma without an attributable history of acute neurological dysfunction attributable to the lesion.
Global Burden of Disease Study

- Stroke is the second leading cause of mortality worldwide
- 3 million of the 4.5 million deaths occur in developing countries
- The most uncertain estimates are those for large parts of sub-Saharan Africa where “even the exact levels of mortality rates are not known”
- A leading cause of adult disability
- **Up to 80% of all strokes are preventable through risk factor management**
- On average, someone suffers a stroke every 40 seconds in America
Stroke Mortality

• Stroke mortality rises rapidly with age
• In industrialised countries stroke is the third leading cause of death (10-12% of all deaths) - 88% are over 65 years.
• Stroke mortality in the US is significantly higher in African Americans than in caucasians.
Aetiology

• Cerebral infarction (CI) – 75- 85%
• Primary intracerebral haemorrhage (PICH) – 10-15 %
• Subarachnoid haemorrhage (SAH) - 5%
• Cerebral venous thrombosis - < 1%
• Spinal Cord Stroke ? epidemiology
Diagnosis and Acute Management

Stroke:
- Acute Stroke
- Recurrent
- Vascular Dementia

TIA
Brain Attack! Time is Brain

Stroke is a “Brain Attack.”

Stroke happens in the brain not the heart

Stroke is an emergency
Stroke Strikes F.A.S.T.
You Should, To Act Fast

- **F** = Face: ask the person to smile
- **A** = Arm: ask the person to raise both arms
- **S** = Speech: ask the person to speak a simple sentence
- **T** = Time: to act

*FAST is Not Good for Posterior Circulation*

USE (AVVV = Ataxia, Vertigo, vomiting, Visual disturbance)

Every minute matters!

Time is BRAIN
Transient Ischaemic Attacks (TIA)

- Symptoms and signs resolve **within 24 hours** (most within 30 minutes)
- As many as 20% may sustain a small infarct visible on CT/MRI (DWI)
- 5-10 times risk of subsequent stroke
- Only 15% of strokes are preceded by a TIA
Why People Don’t Recognize and Respond to Symptoms

- Don’t recognize symptoms
- Denial
- Think nothing can be done
- Worry about cost
- Think symptoms will go away
- Fear or don’t trust hospitals
Blood Supply

- Anterior Cerebral Artery
- Middle Cerebral Artery
- Posterior Cerebral Artery
- Vertebral & Basilar Arteries
Classification of Stroke
Where is the Lesion?

Bamford Classification System (Oxford Classification System) –

- **TACS – Total Anterior Circulation Stroke** - All 3 –
  Unilateral motor +- sensory face arm leg, Homonymous hemianopia, Higher cortical function (Dysphasia, Visuospatial)

- **PACS – Partial Anterior Circulation Stroke** – 2 out 3 Unilateral motor +- sensory face, arm, leg, Homonymous hemianopia, Higher cortical function (Dysphasia, Visuospatial)
ACS

TACS

• Hemiparesis
• Hemianopia
• HCD: dysphasia, VS dysfunction

PACS: MCA or ACA

• Any 2 of:
  • Hemiparesis
  • Hemianopia
  • dysphasia, VS dysfunction
  • HCD alone
Hyperdense MCA Sign
LACS
Pure motor
Pure sensory
Sensorimotor
Ataxic hemiparesis

POCS
MANY SYNDROMES
HEMI/QUADRIPARESIS, ATAXIA, CN PALSIES, CONJUGATE EYE MOVEMENT DISORDER, NYSTAGMUS, COMA, VF DEFECTS
Posterior Circulation Infarctions
Lateral Medullary Syndrome
( Wallenburg Syndrome)

Characterised by:

- **vestibulocerebellar symptoms:**
  - vertigo, falling towards the side of lesion, diplopia, and multidirectional nystagmus
  - **Autonomic dysfunction: ipsilateral** Horner syndrome, hiccups

- **sensory symptoms:**
  - initially abnormal stabbing pain over the ipsilateral face then loss of pain and temperature sensation over the contralateral side of body (spinal trigeminal nucleus involvement)

- **Ipsilateral bulbar muscle weakness:** hoarseness, dysphonia, dysphagia, and dysarthria, decreased gag reflex (nucleus ambiguus)
Watershed/Boundary zone infarcts
Management of Stroke

Summary of systematic review and synthesis of global stroke guidelines on behalf of WSO

Gillian E Mead, Luciano A Sposato, Gisele Sampaio Silva, Laetitia Yperzeele, Simiao Wu, Mansur Kutlubaev, Joshua Cheyne, Kolawole Wahab, Victor C Urrutia, Vijay K Sharma, PN Sylaja, Kelvin Hill, Thorsten Steiner, Mayowa Owolabi, David S Liebeskind and Alejandro A Rabinstein

12 May 2023
Management Acute Ischaemic Stroke

- **General Care:**
  - Reassure, O2, Vascular access, blood samples – Basic tests
  - Brief History and neurological examination (Grading)
  - Cardiovascular check
    - BP
    - Rhythm: AF
    - Carotid bruit

- **Imaging:**
  - CT brain CT angio. / perfusion scan / MRI (MRA/MRV)

- **Reperfusion therapy**
  - Thrombolysis – tPA
  - 4.5 Hr exact time ? Wake up time ? Extended time issue (MRI guided – DWI)

- **Outside Time Limit:**
  - Full general and Neurological assessment
  - Medical therapy
  - Mechanical Thrombectomy:
    - Wake up stroke – MRI needed (DWI)
    - Large artery occlusion/ Basilar Artery
Medical Therapy of Acute Stroke

• BP control
• Antiplatelets
  - Aspirin 300mg od – 14/7 if no CI or Clopidogrel 300mg stat then 75mg OD
  - Dipyridamole can be used in secondary prevention but not in conjunction with Clopidogrel
• Lipid lowering drugs
• Swallowing assessment/ nutrition:
  - NGT as needed
• Fluid balance –
  - Adequate hydration
  - need for bladder catheterization if needed
• DVT prophylaxis
• Identification and management of Co- morbidities:
  - Euoglycaemia – DM –prognosis
  - Cardiovascular Problems: Arrhtyjmia, Carotid stenosis, cardia lesion)
  - Infections ( complication / cause)
• Complications
• Transfer to ICU/ Stroke Unit/ stroke ward/ medical ward
• Consider discharge in minor stroke : lacunar/ recurrent minor
Thrombolytic Therapy
Hypertension High (BP) *****

Management of BP in Ischaemic Stroke
- Monitoring (Stroke Unit, ICU, A&E ward)
- BP management during General Care (IP or OPD)
- BP management in thrombolytic therapy (tPA)
- BP management with Clot retrieval techniques

Management of BP with ICH/SAH

BP control with Neurosurgical Interventions in stroke:
- Decompressive Craniectomy / open aneurysmal clipping / EVD for complications

Rehabilitation in Stoke:
- BP care with Physiotherapy / treat Spasticity including Botox
- BP of the Carers!!

Secondary Prevention --
Haemorrhagic Stroke

- **Hypertension**
- Cerebral Amyloid Angiopathy
- Drugs – Anticoagulation
- AVM
- Tumors: primary / mets.
- Cavernoma / venous angionoma
- Drugs: Cocaine, Cannabis
- Scorpions/ Snakes envenomation
Endovascular Clot Removal
Endovascular Thrombectomy
Clot Retrieval

Pre-clot retrieval

Post-clot retrieval
RCP Guidelines - Clot Retrieval 2016

• Beyond an onset-to-arterial puncture time of 5 hours if:
  • The large artery occlusion is in the posterior circulation, in which case treatment up to 24 hours after onset may be appropriate;
  • A favourable profile on salvageable brain tissue imaging has been proven, in which case treatment up to 12 hours after onset may be appropriate.
The ENCHANTED2/MT trial is the largest multicentre randomised controlled trial comparing the safety and efficacy of blood pressure (BP)–lowering treatment targets in patients after endovascular therapy for acute ischaemic stroke.

Among 821 patients, intensive BP lowering to a systolic target less than 120 mm Hg, compared with a systolic target of 140 to 180 mm Hg, was associated with worse functional outcomes (OR, 1.37), greater early neurological deterioration at 7 days (OR, 1.53), and major disability at 90 days (OR, 2.07). There was no significant difference in the risk of symptomatic intracerebral haemorrhage or mortality between the target groups.

After endovascular thrombectomy for acute ischaemic stroke owing to intracranial large-vessel occlusion, intensive control of systolic BP to lower than 120 mm Hg should be avoided, given the risk of neurological deterioration and worse functional outcomes.

– Giselle A. Suero-Abreu, MD, PhD, MSc
Hypertensive Bleeds

• Most common bleed
• Secondary to microaneurysms of perforating arteries – **Charcot-Bouchard** aneurysms – Chronic Hypertension
  – 80% Lenticulostriate – BG (most common - Putamen), Thalamus
  – 10% Pons
  – 10% Cerebellum
Patients with primary intracerebral haemorrhage who present within 6 hours of onset with a systolic BP above 150mmHg should be treated urgently using a locally agreed protocol for blood pressure lowering to a systolic blood pressure of 140 mmHg for at least 7 days, unless:

– the Glasgow Coma Scale score is 5 or less;
– the haematoma is very large and death is expected;
– a structural cause for the haematoma is identified;
– immediate surgery to evacuate the haematoma is planned (Premorbid fit - progressive/ rebleeding)
Hypertensive Bleeds  Pons

Pons  Cerebellum
The 5 Ds
• Dizziness.
• Diplopia (double vision)
• Dysarthria (slurred speech)
• Dysphagia (difficulty swallowing)
• Dystaxia (abnormal gait, balance, motor movements)

Posterior fossa craniotomy and evacuation of the haemorrhage may be necessary for patients with worsening clinical condition. With surgical intervention some comatose patients still may have a good clinical outcome.
Subarachnoid Haemorrh (SAH)

- Rupture of aneurysm in the circle of Willis
- Occasionally due to leak from an arteriovenous malformation (AVM) - spontaneous or secondary to trauma
- Cerebral vasospasm may lead to delayed cerebral infarction (4-14 days) in up to a third of patients
- Non-Aneurysmal SAH - peri-mesencephalic
- Extension from ICH or Intra-ventricular haemorrhage
BP Management in SAH

AHA/ASA Guideline

Guidelines for the Management of Aneurysmal Subarachnoid Hemorrhage

A Guideline for Healthcare Professionals From the American Heart Association/American Stroke Association

The American Academy of Neurology affirms the value of this statement as an educational tool for neurologists.

Endorsed by the American Association of Neurological Surgeons and Congress of Neurological Surgeons; and by the Society of NeuroInterventional Surgery

E. Sander Connolly, Jr, MD, FAHA, Chair; Alejandro A. Rabinstein, MD, Vice Chair; J. Ricardo Carhuapoma, MD, FAHA; Colin P. Derdeyn, MD, FAHA; Jacques Dion, MD, FRCP; Randall T. Higashida, MD, FAHA; Brian L. Hoh, MD, FAHA; Catherine J. Kirkness, PhD, RN; Andrew M. Naidech, MD, MSPH; Christopher S. Ogilvy, MD; Aman B. Patel, MD; B. Gregory Thompson, MD; Paul Vespa, MD, FAAN; on behalf of the American Heart Association Stroke Council, Council on Cardiovascular Radiology and Intervention, Council on Cardiovascular Nursing, Council on Cardiovascular Surgery and Anesthesia, and Council on Clinical Cardiology

Purpose—The aim of this guideline is to present current and comprehensive recommendations for the diagnosis and

Subarachnoid haemorrhage caused by a ruptured aneurysm: diagnosis and management

NICE guideline [NG228] Published: 23 November 2022

Guidance

Recommendations

Recommendations for research

Rationale and impact

Context

Recommendations

1.1 Assessment and diagnosis

1.2 Managing a confirmed aneurysmal subarachnoid haemorrhage
Neurosurgery in Stroke

Decompressive craniotomy
Clot removal
Carotid Endarterectomy/ stenting
Vascular bypasses
SAH- management (ligation, embolization)
Stroke Prevention in Symptomatic Large Artery Intracranial Atherosclerosis Practice Advisory

Report of the AAN Guideline Subcommittee

Tanya N. Turan, MD, MSCR, Osama O. Zaidat, MD, Gary S. Gronseth, MD, Marc I. Chimowitz, MBChB, Antonio Culebras, MD, Anthony J. Furlan, MD, Larry B. Goldstein, MD, Nestor R. Gonzalez, MD, Julius G. Latore, MD, MPH, Steven R. Messé, MD, Thanh N. Nguyen, MD, Rajbeer S. Sangha, MD, Michael J. Schneck, MD, MBA, Anveesh B. Singhal, MD, Lawrence K. Wechsler, MD, Alejandro A. Rabinstein, MD, Mary Dolan O’Brien, MLIS, Heather Slobbee, and Jeffrey J. Fletcher, MD, MSc

Neurology® 2022;98:486-498. doi:10.1212/WNL.000000000000200030

Abstract

Background and Objectives
To review treatments for reducing the risk of recurrent stroke or death in patients with symptomatic intracranial atherosclerotic arterial stenosis (sICAS).

Methods

Correspondence
American Academy of Neurology
guidelines@aan.com
Fibromuscular Dysplasia FMD
Severe Hypertension in Young patients

Bil Renal artery stenosis
Avoid ACE inhibitors
Mild headache with Sudden Loss of part of Visual Field!

Right Occipital Haemorrhage
Neurology and renal disorders

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Consultant Neurologist, Sunderland Royal Hospital and the Regional Neuroscience Centre, Newcastle upon Tyne

Clin Med 2007:7:165–70

Following the introduction of haemodialysis and renal transplantation it became particularly clear that renal disease may adversely affect the nervous system. A range of neurological manifestations of acute (ARF) and chronic renal failure (CRF) have been recognised.

- There are well known interactions when systemic disorders such as diabetes or hypertension affect both the kidney and the nervous system.
- Systemic lupus erythematosus (SLE), other vasculitides and granulomatous disorders commonly show neurological and renal complications.
- Electrolyte disturbances in patients with renal and systemic disorders can manifest with specific and non-specific neurological features. These should be recognised early to avoid permanent sequelae which may occur if not treated promptly, as in the osmotic demyelination syndromes following rapid correction of hypo- or hypernatremia.
- Rare, but potentially treatable, serious neurological conditions include thrombotic thrombocytopenic purpura (TTP) and cocaine-related vasculitis.¹
- Neurological features may be the first indication of renal disease, for example peripheral neuropathy with CRF, aneurysmal subarachnoid haemorrhage in polycystic kidney

Neurological problems associated with renal replacement therapies

Dialysis dysequilibrium syndrome

The dialysis dysequilibrium syndrome is a complication of haemodialysis caused by the creation of an osmotic gradient between the brain cells and the plasma. Rapid clearance of urea and other solutes leads to a shift of water into the brain parenchyma with resultant cerebral oedema. It presents with headache, nausea, vomiting, restlessness, muscle cramps and confusion. It usually resolves in a few hours after dialysis and is prevented by slower dialysis.

Dialysis dementia

Dialysis dementia is now seen infrequently if at all compared with the early years of haemodialysis. It was linked to an increased level of aluminium in the soft water used in the dialyser and presented with dysarthria, dysphasia and dysgraphia, progressing to gait apraxia, myoclonic jerks and seizures, leading in extreme cases to immobility and mutism followed by death. Dialysis dementia is treated with the chelating agent desferrioxamine.²

Uraemic encephalopathy

Either acute or chronic, uraemic encephalopathy is usually more severe in the context of ARF. The initial symptoms are fatigue, poor concentration and clumsiness, but as the renal function deteriorates there is progression to ataxia, multifocal myoclonic jerks, generalised seizures, confusion and coma. In the chronic form, patients show emotional lability, sluggishness and inversion of sleep pattern as well as renal replacement therapies (RRTs) and may resolve completely after successful renal transplantation.³

Osmotic demyelination syndromes

The osmotic demyelination syndromes (ODS) complicate treatment of hypotenaemia in which serum sodium is usually less than 120 mmol/l. The commonly recognised type is central pontine myelinolysis (CPM), although extrapontine myelinolysis (EPM) is increasingly reported; the pathogenesis is the same in both types. ODS should be considered in patients who deteriorate neurologically after an illness associated with hypotenaemia or have received a large volume of intravenous fluids even if the imaging is not supportive initially. To prevent this serious complication the sodium should not be corrected by more than 8 mmol/l/day, particularly in chronic hypotenaemia (serum sodium <136 mmol/l for >48 hours).

CPM presents with brainstem dysfunction, including flaccid tetraparesis and occasionally locked-in syndrome. EPM has variable presentations which depend on the affected area

Key Points

The kidney and the nervous system have close interactions under both physiological and pathological states

Systemic disorders like diabetes, hypertension, vasculitides and genetic disorders can affect both the nervous system and the kidney

Awareness and early recognition of conditions such as thrombotic thrombocytopenic purpura and osmotic demyelination syndromes should lead to prompt treatment and prevention of serious sequelae

Neurological features can be the first manifestations of a renal disease or
Stroke in Infections

1- Viral
   - HIV
   - HZV
   - CMV
   - PML (JC virus)

Protozoal:
   Malaria
   Toxoplasmosis

2- Bacterial – meningitis including TB

3- Spirochaetal
   Syphilis

4- Helminthic
   Cysticercosis
   Hydatic Disease

5- Post infectious Angiitis
Stroke in HIV

Prevalence and incidence of stroke among people with HIV

Min Du^a, Yaping Wang^a, Chenyuan Qin^a, Donghua Mi^b, Min Liu^a and Jue Liu^a,c,d,e

Objective: We aimed to obtain more precise estimates of stroke to address the wide variation of stroke burden among people with HIV (PWH) in different clinical settings.

Design: Systematic review and meta-analysis.

Methods: We systematically searched PubMed, EMBASE, and Web of Science for original articles reporting the prevalence and incidence of stroke among PWH up to November 23, 2022. Der Simonian-Laird random effects were used to obtain pooled estimates and 95% confidence intervals (CIs).

Results: We included 17 observational studies covering 1,749,003 PWH on estimation

- Ischaemic
- Haemorrhagic
- Venous strokes – C dural Sinus thrombosis
HIV and Ischaemic Stroke

- Clinical, radiological, and pathological series, there is an increased risk of IS in AIDS patients

  - 96% pts. Ischemic strokes
  - 91% were younger than 46 years
  - opportunistic infections- 37%, most common infection was tuberculosis (15%)
  - HIV-associated vasculopathy-20%
  - Cardioembolism- (14%) patients
  - At the time of their stroke, 46% of these patients had CD4 counts < 200 cells/mm3
  - Traditional vascular risk factors were uncommon in these HIV-infected patients with stroke

Tipping B et.al. J Neurol Neurosurg Psychiatry 2007;78:1320–1324
Stroke in Infections

1 - Viral
   - HIV
   - HZV

J Neural Neurosurg Psychiatry 2007;78:1291. doi: 10.1136/jnnp.2007.122416
VZV vasculopathy
Stroke and TB

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Acute ischemic stroke in young adults with tuberculous meningitis

Liming Zhang¹, Xiaoyu Zhang², Huaqiang Li¹,³, Gang Chen¹* and Meijia Zhu²*

Abstract

Background: Ischemic stroke is a common complication in patients with tuberculous meningitis (TBM), which is associated with poor clinical outcome. However, risk factors of stroke in TBM patients were not fully understood, especially in those young adults. Therefore, the aim of our study was to identify risk factors for acute ischemic stroke in young adults with TBM.

Methods: TBM patients (18 to 50 years) without cerebral vascular risk factors were prospective recruited between Feb 2014 and Dec 2017. Patients were defined as stroke group and non-stroke group by brain magnetic resonance imaging (MRI). Demographic characteristics, clinical presentations, cerebrospinal fluid (CSF) examination, basal meningeal enhancement, hydrocephalus, tuberculoma and clinical outcome were compared between two groups. Binary logistic regression was performed to determine risk factors for acute ischemic stroke in young TBM patients.

Results: Fifty-two patients with TBM were included and 12 (23.1%) patients were in stroke group. Patients in stroke group were older. Clinical presentations were comparable between two groups except headache was more.
Summary

- We used Korean National Health Insurance data which covers almost entire Korean population (~50 million).
- A total of 72,863 tuberculosis survivors diagnosed between 2010-2017 and finished treatment were enrolled and 1:1 matched with non-tuberculosis comparison group by age and sex.
- During a median F/U of 3.8 years, 1.3% of tuberculosis survivors (941/72,863) and 1.0% of matched non-tuberculosis cases (707/72,863) developed ischemic stroke.
- The overall risk of ischemic stroke was higher in tuberculosis survivors (adjusted hazard ratio: 1.22, 95% confidence interval: 1.10–1.36) compared to the matched non-tuberculosis group.
Stroke in Infections

Protozoal:

Malaria: very rare cause of stroke
Stroke in Infections

3- Spirochaetal Syphilis
HIV and Syphilis

(The great Imitator)
Meningovascular syphilis
Late Syphilis

Argyll Robertson pupils
COVID-19 and Stroke

During the follow-up period, recovered COVID-19 patients showed an increased risk of ischemic stroke (HR: 2.06, 95% CI: 1.75–2.41, p < 0.0001, I² = 63.7%) compared to subjects who did not experience COVID-19 infection but developed ischemic stroke over the same period.
COVID-19 and Stroke

Marco Zuin¹,², Maria Mazzitelli³, Gianluca Rigatelli⁴, Claudio Bilato² and Anna Maria Cattelan³

Abstract

Background: Data regarding the risk of ischemic stroke within 1 year after the post-acute phase of COVID-19 remain scant. We assess the risk of ischemic stroke in COVID-19 survivors after SARS-CoV-2 infection by performing a systematic review and meta-analysis of the available data.

Methods: Following the PRISMA guidelines, we searched Medline and Scopus to locate all articles published up to February 11, 2023, reporting the risk of incident ischemic stroke in adult patients recovered from COVID-19 infection compared to non-infected patients (controls) defined as those who did not experience the infection over the same follow-up period. Ischemic stroke risk was evaluated using the Mantel–Haenszel random effects models with adjusted Hazard ratio (HR) as the effect measure with 95% confidence interval (CI) while heterogeneity was assessed using Higgins I² statistic.

Results: Overall, 23,559,428 patients (mean age 56.1 year, 54.3% males), of whom 1,595,984 had COVID-19, were included. Over a mean follow-up of 9.2 months, ischemic stroke occurred in 4.40 [95% CI: 4.36–4.43] out of 1000 patients survived to COVID-19 compared to 3.25 [95% CI:3.21–3.29] out of 1000 controls. Recovered COVID-19 patients presented a higher risk of ischemic stroke ((HR: 2.06, 95% CI: 1.75–2.41, p < 0.0001, I² = 63.7%) compared to people who did not have COVID-19. COVID-19 patients hospitalized at the time of the infection have a subsequent higher risk of stroke during the follow-up compared to those non-hospitalized.

Conclusions: Recovered COVID-19 patients have a higher risk of ischemic stroke compared to subjects from the general population within 9 months from the index infection.

Keywords
Stroke, COVID-19, long-COVID

Date received: 5 June 2023; accepted: 6 July 2023
Neuro-helminthiasis

Neurocysticercosis
Paragonimiasis

**Paragonimiasis**
Paragonimiasis is a parasitic infection with a flatworm which may enter the body through eating undercooked crab or crayfish. It is rare in the United States, though several cases have been reported in the Midwest. Most commonly it is found in East Asian countries.29

Centrse for Disease Control & Prevention. Parasites:
The parasite does not often affect the central nervous system but the parasite may reach the brain either through the bloodstream or through the foramina at the base of the skull.
The adult form of the parasite both releases inflammatory substances and tunnels through tissues, which can result in headaches, seizures, and **strokes**.
Transactions of the Royal Society of Tropical Medicine and Hygiene
Volume 86, Issue 4, July–August 1992, Page 417

Short report

Therapeutic effect of triclabendazole in patients with paragonimiasis in Cameroon: a pilot study

C. Ripert, B. Couprie, R. Mayou, F. Gaillard, M. Appriou, J. Tribouley-Duret
Humans ingest inadequately cooked or pickled crustaceans containing metacercariae.

Excyst in duodenum

Adults in cystic cavities in lungs lay eggs which are excreted in sputum. Alternately eggs are swallowed and passed with stool.

= Infective Stage

= Diagnostic Stage

Embryonated eggs

Unembryonated eggs
Stroke in Infections

5- Post infectious Angiitis

Infectious Causes of Stroke

Stroke is an often-devastating and not uncommon complication of many central nervous system infections.

By Jennifer E. Fugate, DO

Every year, an estimated 15 million people experience stroke worldwide. The impact and burden of strokes are substantial—one-third of these individuals (5 million) die from stroke. Prodromal symptoms over weeks to months, including headache, malaise, and/or personality and behavioral changes. Neurosyphilis should be considered in any young adult with stroke who lacks traditional cerebrovascular risk factors, par...
Infectious vasculopathy of intracranial large- and medium-sized vessels in neurological intensive care unit: a clinico-radiological study

J Katchanov, E Siebert, R Klingebiel, M Endres

Abstract

Background: Infections are a well-known cause of cerebral vasculopathy and vasculitis. We aimed to analyze the frequency of intracranial vasculopathy attributable to infection, the spectrum of causative microorganisms, imaging, and cerebrospinal fluid (CSF) characteristics as well as clinical course and outcome.

Methods: We used our institution’s medical record system to identify all patients diagnosed with nonatherosclerotic central nervous system vasculopathy from January 1, 1999 through February 28, 2009. We reviewed their clinical charts, imaging data, and results of CSF studies.
Cerebrovascular Diseases

**Volume 26, Issue 5**  
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REVIEW ARTICLES | SEPTEMBER 23 2008

**Cerebral Vasculitis and Stroke in Lyme Neuroborreliosis:**  
Two Case Reports and Review of Current Knowledge

Subject Area: 🏥 Cardiovascular System, 🧠 Neurology and Neuroscience

Raffi Topakian; Karl Stieglbauer; Karin Nussbaumer; Franz T. Aichner

https://doi.org/10.1159/000155982  📖 Article history
Stroke Mimics

Other Conditions presenting as Stroke

• Toxic/metabolic disturbance such as:
  • Hypoglycaemia
  • Drug and alcohol toxicity.

• Conditions which can cause dizziness or disturbed balance such as:
  • Syncope
  • Labyrinthine disorders — vertigo, Meniere's disease,

• Neurological conditions such as:
  • Seizure
  • Migraine with aura
  • Demyelination — multiple sclerosis
  • Peripheral neuropathies such as Bell’s palsy
  • Spinal epidural haematoma

• Trauma

• Systemic or local infection including:
  • Central nervous system abscess
  • Encephalitis
  • Sepsis

• Encephalopathies such as:
  • Hypertensive encephalopathy
  • Wernicke’s encephalopathy

• Space occupying lesions including:
  • Tumour
  • Subdural haematoma

• Other conditions such as:
  • Acute confusional state
  • Dementia
  • Vasculitis
  • Functional
Stroke Mimics

Haemorrhagic Met. From Thyroid Ca

28 yr M brought from Prison. Multiple head Injuries
Stroke Chameleon
Stroke that presents like other conditions

- Seizures:
  - e.g. Temporal lobe infarct presenting as Non convulsive SE
- Transient Amnesia (TGA)
- Dysphasia/ aphasia (MCA)
- Acute Delirium
- Acute paraparesis/ Monoparesis
  - Ant Spinal Artery Syndrome – Myelopathy in Spinal Dural fistula
- Vertigo / Loss of Balance (POCS) – BPPV
- Severe migraine / Thunderclap Headache
- Visual loss-
  - Unilateral (Amaurosis fugax)
  - Bilateral (cortical blindness)
- Abnormal Movements:
  - Hemiballismus/ Rubral tremor/ ataxic tremor
Acute mutism: a useful lesson

Melissa Maguire, Osheik Seidi, Mark Baker, Arun Gupta, Cyrus Muwanga

A 49-year-old right-handed man presented to casualty with a 2-day history of mutism. He had had an altercation with his partner and had left the house to stay with a friend. Later that evening he was found unresponsive on the sofa having been unconscious of time. During the next two days he was cared for by his partner but remained mute, with minimal interactions with others.

He had a history of depression since April 2007, following the death of his mother. He had been in mood and was consuming large quantities of amphetamine (200mg per week) and diazepam (40mg tablets per week) smoking cannabis and drinking eight cans of lager a day. A few weeks before admission he had tried to overdose with diazepam. He had a history of self-harm and drug overdoses. He had been diagnosed with anti-social personality disorder and had a forensic history of domestic violence. There was no relevant past medical history. There was a family history of depression. He smoked 20 cigarettes per day.

On admission to casualty he could not communicate verbally but could respond to questioning through gestures. His temperature was 37.2°C, blood pressure 130/70 mm Hg and pulse 70 beats per minute and regular. His score on the Glasgow Coma Scale was 15/15, and on initial assessment no evidence of head injury or abnormal neurological findings had been reported. Toxicology screening of urine was positive for cannabis and benzodiazepines. Blood investigations revealed neutrophilia (11.5x10^9/L) and leukocytosis (18x10^9/L) with normal inflammatory markers and no other abnormalities.

He was referred to psychiatric services with initial thoughts of self-harm and to secondary care due to his depression. He was communicating with the staff through gestures and writing. Objectively he had no low mood or active thoughts. His BPRS, Cognis, Cators, judgment, thought content and insight were all normal. His score on the Mini Mental State Examination was 30/30.

His MR imaging confirmed a regional infarct in the supply area of the left middle cerebral artery, with a trace of haemorrhagic component (Figure 1B). MR angiograms of both the extracranial and intracranial major vessels did not reveal any abnormalities. An autoimmune screen was negative.

This patient presented with acute mutism secondary to a dorsolateral frontal massive infarct, likely related to cerebral vasculopathy as a result of chronic amphetamine and cannabis abuse. The patient was given aspirin and statins and was advised to stop smoking and using illicit drugs. He was referred to speech and language services and has since made a good recovery of his ability to speak. He is continuing psychosocial therapy and engaging in activities from the substance abuse services.

Acute mutism may occur in both organic and non-organic disease and may cause diagnostic difficulties. Important organic causes include head injury, encephalitis and strokes affecting the dorsolateral frontal cortex, causing Broca’s aphasia. In this case, Broca’s aphasia was caused by infarction attributable to misuse of amphetamine and cannabis, both of which have been implicated in stroke independently, causing severe hypertension and vasospasm.

Areal disconnection can occur in amphetamines abuse. Expression, naming and production of spontaneous speech are affected, resulting in non-fluent aphasia, with telegraphic speech and agenesis. Comprehension appears relatively spared. Hyperphonia, limb apraxia and hemiparesis may be present.

Figure 1: CT brain scan image (A) showing a large hypodense area in the left dorsolateral frontal (Broca’s) area due to cerebral infarction, with hypodensities representing haemorrhagic changes in the centre (white arrow). The same is confirmed on a T2 axial (B) MRI which showed a right posterior extension of the infarct.
Migraine Stroke

Migraine Stroke in a young man from Sudan: a Case Report

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Case Report:

A 43 years old male Sudanese gentleman was known to suffer from migraine without aura from his teenage. He usually gets pain on both sides of his head that had a throbbing nature. It was intense at times interfering with his work and social life.

It was associated with intense photo- and phonophobia. other neurological or general signs of note. This defect

No established Guideline
My recommendations:
Closely monitor BP – avoid lowering unless > 200/110
Manage pain
TRIPTAN are contraindicated
OUTREACH TRIPS
Our Students & Youth = Our Future

Thank You
Prof Osheik Abu’Asha Seidi
MRCP(UK), ABIM, CCST (UK), FRCPE,FRCPG, FRCPL, FAAN

14th RTC - EAN
Dar es Salam, Tanzania
30th October 2023