Max Healthcare

Caring for you... for life

STROKE PROTOCOL

A Max India Institution

Scope

This protocol covers the acute and long term management of ischaemic stroke and transient ischaemic attacks.

Aim

This protocol is written to provide information to all people involved in the management of patients with stroke.

The Stroke team

A team is a group of individuals who **share common values** and work towards **common goals.**

Comprehensive management of patients who have suffered from a Stroke is a team effort in which every member plays an important role. The team consists of:

1. Doctors
2. Nurses
3. Physiotherapists
4. Language and speech therapists
5. Occupational therapists
6. Rehabilitation services

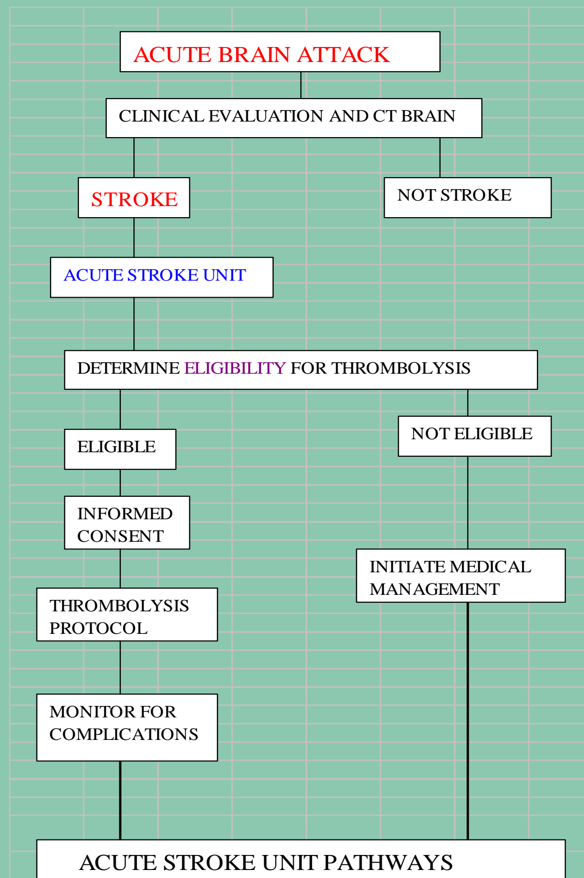
It is important for team members to use the same terminology and vocabulary in communicating with one another. One important way is to classify the stroke syndrome according to the Oxfordshire Community Stroke Classification (see Appendix “A”)

Taking the first step

As soon as a patient with suspected stroke is brought to the Emergency, the patient's airway will be protected and adequate oxygenation ensured. Adequacy of circulation will be determined and an I.V. line secured.

The second Step

Determine whether or not the patient has stroke and follow the algorithm noted below.



Admission to the Stroke Unit

All patients will be admitted to Stroke Unit under the Stroke Neurologist. The medical history and general and neurological examination will be performed rapidly and eligibility for thrombolysis will be determined (see protocol for thrombolysis at Appendix “B”)

Clinical assessment of the patient will include categorization according to the OCSP as TACS, PACS, LACS or POCS

A neuroradiological examination will be done immediately.

Admission to the Stroke Unit Contd…

Complete Blood Count, Erythrocyte sedimentation rate, serum electrolytes, random blood glucose,renal and liver function tests, prothrombin time and INR, activated partial thromboplastin time, serum lipids, 12 lead electrocardiogram and chest x-ray should be done in all patients.

Patients who are **not** eligible for thrombolysis will be given Tab ASA 300 mg stat, then 75mg OD, if there is no contraindication

Max Healthcare
Caring for you... for life

FOR ALL PATIENTS ADMITTED TO THE STROKE UNIT

A Max India Institution

Airway, Oxygenation & Circulation

All patients must have all vital signs checked and oxygen saturation measured. If SaO_2 is less than 95% they must be put on 8 litres oxygen per minutes unless they have COPD in which case oxygen will be given at 2 litres per minute by nasal cannula.

Check that an IV cannula has been properly placed and is functioning.

DVT Stockings

Full length DVT stockings(TEDS) will be given for all patients except those with peripheral vascular disease. THE STOCKINGS SHOULD BE REMOVED FOR HALF AN HOUR AFTER SEVEN AND A HALF HOURS

Swallowing Difficulties [DYSPHAGIA]

1. All patients with PACS, TACS and POCS will be kept NPO. NGT tube will **not** be inserted initially.
2. Patients with LACS will be assessed for dysphagia and if they can swallow they will be allowed normal fluids and food.
3. Those with PACS, TACS, POCS and those with LACS who fail the swallow test will be put on IV Normal Saline. **5% dextrose or hypotonic solutions will not be used except in hypoglycaemia when** 5% or 10 % dextrose can be used.

Swallow Test

1. Patient must be fully conscious and alert.
2. EXPLAIN TO THE PATIENT WHAT YOU ARE GOING TO DO.
3. Sit the patient in a chair or bed with the back upright.
4. Remove all distractions.
5. Use a cup with about 50 ml water.
6. For jelly use half a spoonful of jelly. When withdrawing the spoon, press the tongue down. Wait till the act of swallowing is complete.
7. Be patient. Do not hurry them up.
8. Do not allow anyone to talk to the patient at the time of the test or to distract them in any other way.

Hypertension

DO NOT TREAT SYSTEMIC HYPERTENSION in the Emergency Room.

After admission to the Stroke Unit assess BP every ½ hour for 2 hours. Blood pressure usually falls gradually over 1-2 days.

Urgent pharmacological intervention is needed if:

a) BP is over 200/110 mm Hg.
b) There is left ventricular failure.
c) There is a hypertensive emergency associated with stroke such as hypertensive encephalopathy, aortic dissection, intracerebral haemorrhage or malignant hypertension.

Hypertension Contd…

Aim to bring down the blood pressure gradually **over one to two weeks**. Initially BP of 190-200/100-110 mm is acceptable but it must be brought down to about 140/85 mm in non diabetic patients and to 130/80 mm Hg in diabetic patients.

Diabetes Mellitus

Patients who have diabetes mellitus and stroke should have their RBS assessed every 6 hours initially and regular insulin should be given on a sliding scale EITHER SUBCUTANEOUSLY OR INTRAVENOUSLY. Aim to keep RBS below 10.0 mmol/L.

Assessment and Management of Incontinence

1. Male patients are to be given condom catheters. If there is urinary retention Foleys catheter should be inserted.
2. Female patients should have pampers. These should be changed frequently. The nurse should check pampers every 2 hours.

Prevention of Bed Sores

1. Position the patient as described during Stroke Education Classes.
2. Change position every 2 hours.
3. Use air or water mattress(e.g. alpha bed)

Assessment of Nutritional Status And Hydration

1. All stroke patients will be assessed for their hydration and nutritional status on admission and regularly thereafter.
2. Those with persistent swallowing impairment will have a nasogastric tube inserted and given blenderized feeds or osmolyte as appropriate.
3. After an NGT feed the patient will be kept upright for 45-60 minutes

Mouth Care

All patients will have their mouths kept clean and free from infection

Max Healthcare
Caring for you... for life

Patient Transfer

1. DO NOT HOOK AND LIFT
2. Use a draw sheet
3. Use a hoist for patient transfer

A Max India Institution

Max Healthcare
Caring for you... for life

Neurological Observations

The following observations will be made and recorded in the Stroke observation sheet in addition to the vital signs.

1. Glasgow coma scale
2. Pupil size and reaction
3. Level of consciousness

Rehabilitation

Rehabilitation starts as soon as possible **in the acute stroke unit** and physiotherapy is required round the clock. At least three sessions are needed in a day, each session lasting no less than 20 minutes. During this period chest physiotherapy will be performed as well as passive movements of limbs.

In the intermediate care, patients will undergo a programme designed to the needs of each patient. Goals will be set and at weekly team meetings progress of patients will be monitored and discussed.

Long-term care will consist of half-day sessions for the patient. Physiotherapy will be given for a total of 60 minutes with breaks according to the condition and motivation of the patient. The break periods will be utilized for education, recreation and entertainment. This period will also serve as respite for the caregiver.

Rehabilitation Contd…

During this half-day session, occupational and speech therapists will evaluate and assist the patient as necessary.

For patients who are unable or unwilling to attend our stroke rehabilitation unit, domiciliary visits will be organized.

A multidisciplinary assessment of rehabilitation must include

1. screening for cognitive impairment
2. assessment of nutritional status
3. assessment of problems with communications
4. self care

Anticoagulants in Ishaemic Stroke

Anticoagulants should not be given routinely for the treatment of stroke including progression.

However, unfractionated heparin may be used immediately in the following situations (grade of recommendation C)

1. Large artery occlusions and severe stenosis
2. Cardiogenic embolism with a high acute recurrence risk
3. cerebral venous thrombosis

All patients who have atrial fibrillation should be started on oral anticoagulants unless it is contraindicated. It should not be started until brain imaging has excluded haemorrhage and usually not until 14 days have passed from the onset of an ischaemic stroke.

Reversal of Anticoagulation

For life threatening haemorrhage(intracranial or major gastrointestinal)

1. For those on unfractionated heparin Injection Protamine Sulphate should be given intravenously. 1mg protamine neutralizes 80-100 units of unfractionated heparin if given within 15 minutes.

2. For those on warfarin give Injection Vitamin K_1 5mg intravenously **and** fresh frozen plasma 15ml/kg body weight (approximately one litre in and adult.)

Barthel Index

On admission and once a week the Barthel Index will be assessed and recorded. See the chart at the end of this protocol.

Max Healthcare

Caring for you... for life

Appendix “A”

A Max India Institution

Oxfordshire Community Stroke Project Classification

Although there are many ways in which stroke maybe classified the one used by the Oxfordshire Community Stroke Project has many advantages:

1. It is simple to apply without specialist neurology training
2. There is a good inter-observer reliability
3. It is rapid
4. It is easy to communicate
5. It predicts death, long term disability and recurrent stroke
6. It relates to the underlying vascular occlusion

Total Anterior Circulation Syndrome (TACS)

Definition

At time of maximum deficit, all of:

- Hemiplegia or severe hemiparesis.
- Hemianopia
- New disturbance of higher cerebral function (e.g. aphasia, apraxia, agnosia).

If conscious level is impaired and testing of higher cerebral function and visual fields is not possible a deficit is assumed.

Max Healthcare
Caring for you... for life

Partial Anterior Circulation Syndrome (PACS)

Definition

At time of maximum deficit, any of:

- Motor/sensory deficit + hemianopia.
- Motor/sensory deficit + new higher cerebral dysfunction.
- New higher cerebral dysfunction + hemianopia.

  Pure motor or pure sensory deficit less extensive than for LACS. (e.g. monoparesis or part of limb)
- New higher cerebral dysfunction alone

Lacunar Syndrome [LACS]

Definition

- Maximum deficit from a single vascular event.
- No visual field defect.
- No new disturbance of higher cerebral function.
- No signs of brain stem disturbance.

Lacunar Syndrome [LACS] Contd…

- Pure Motor Stroke (PMS)
- Pure Sensory Stroke (PSS)
- Ataxia hemiparesis (AH)
- Sensorimotor Stroke (SMS)

For PMS, PSS or SMS the deficit must involve at least two out of three areas of face, arm and leg.

THE WHOLE LIMB MUST BE AFFECTED NOT JUST A PART.

Posterior Circulation Syndrome (POCS)

Definition

At time of maximum deficit any of:

- Ipsilateral cranial nerve palsy (III to XII) with contralateral motor and or sensory deficit.
- Bilateral motor or sensory deficit.
- Disorder of conjugate eye movement.
- Cerebellar dysfunction without ipsilateral long tract deficit.
- Isolated hemianopia or cortical blindness.

Appendix "B"

Protocol for thrombolysis (based on the guidelines of the American Heart Association):

Three conditions **MUST** be fulfilled:

1. The neurological deficit must be due to **ischaemic stroke**
2. The time of onset must be known
3. There must be no contraindications

A Max India Institution

The following patients can be considered suitable for thrombolysis:

1. Patients whose symptoms started less than 3 hours ago. If the time of onset is not known, the time the patient was last seen to be well will be taken as time of onset. If stroke is discovered on waking up, the time of onset is the time the patient went to sleep.
2. CT scan brain is mandatory. It should **not** show a multilobar infarction. If the hypodensity is greater than 1/3 of the cerebral hemisphere thrombolysis should **NOT be given.**
3. The patient or relatives should understand the potential risks and benefits.

Max Healthcare
Caring for you... for life

Contraindications for Thrombolysis

1. Minor neurological signs or those who are rapidly improving
2. History of intracerebral haemorrhage at any time
3. History suggestive of subarachnoid haemorrhage
4. History of stroke or head trauma in the past three months
5. History of myocardial infarction in the past three months
6. History of gastrointestinal or urinary haemorrrhage in past three weeks
7. Major surgery in past 14 days
8. Minor surgery within past 10 days, including liver and kidney biopsy and thoracocentesis and lumbar puncture.
9. Arterial puncture at a non-compressible site in past 7 days
10. Blood pressure equal to or greater than 185mm systolic and 110mm Hg diastolic

Max Healthcare
Caring for you... for life

Contraindications for thrombolysis Contd…

11. Active bleeding or trauma (fracture) on examination
12. Patients who are on anticoagulants.
13. Patients who received heparin in the past 48 hours
14. INR more than 1.5
15. APTT must be in the normal range
16. Platelet count less than 100,000
17. RBS less than 50mg/dl (2.7mmol/L) or greater than 400mg%(22.2mmol/L)
18. Seizures prior to onset of the neurological deficit.
19. Pregnant and upto 10 days postpartum.
20. Life expectancy less than 1 year from other causes

NB

Patients with severe deficits(NIHSS more than 20 and those older than 75 years have an increased risk of haemorrhage) The NIH stroke scale is at Appendix ‘A’

Max Healthcare
Caring for you... for life

Regimen for treatment with intravenous TPA

1. Obtain a written informed consent on the form provided
2. The dose of rtPA is 0.9mg/kg body weight
3. 10% of the calculated dose will be given as a bolus and the remaining 90% of the dose infused over one hour with an infusion pump.
4. The patient will be admitted to Stroke ICU
5. Neurological assessment will be performed every 15 minutes during the infusion of tPA and every 30 minutes for the next 6 hours and then every hour for the next 17 hours.

Regimen for treatment with intravenous TPA

6. STOP the infusion of tPA if the patient develops any of the following alone or in combination:
    a. headache or
    b. vomiting or
    c. sudden rise in blood pressure

    and obtain a CT scan of brain urgently.

7. Measure blood pressure every 15 minutes for the first 2 hours, every 30 minutes for the next 6 hours and every hour for the next 16 hours

A Max India Institution

8. The blood pressure **must** remain below **180mm Hg systolic** and **105 mm Hg** diastolic.If two consecutive readings 5-10 minutes apart confirms that the blood pressure is above these levels, this the following measures are to be instituted:
   a. Injection Labetalol 10 mg intravenously stat over 2 minutes followed by an infusion given at the rate of 2-8 mg/min
   b. If BP is still uncontrolled administer infusion of Inj sodium nitroprusside at a rate of 0.5-10 micrograms/kg/min.
9. If, however, the **diastolic blood pressure is over 140mmHg** on two readings 5 minutes apart infuse Inj sodium nitroprusside at a rate of 0.5-10 micrograms/kg/min

10. Delay placement of nasogastric tubes for 24 hours.
11. If it is essential to place an indwelling bladder catheter(Foley's catheter) this should be avoided during infusion of tPA and for 30 minutes thereafter.
12. Avoid intra-arterial pressure catheters for 24 hours.
13. If clinical circumstances require a central line or triple lumen catheter for monitoring cardio pulmonary status these could be inserted one hour after completion of thrombolysis.
14. DO NOT reduce blood pressure to "normal levels". See management of hypertension.
15. DO NOT administer aspirin, heparin or warfarin for 24 hours after tPA.

Treatment of major life threatening bleed

Although the half life of tPA is 3-8 minutes and after 20 minutes there is very little clinical effect, 36 hours after tPA haemorrhagic complications are a major worry. This may be an intracerebral haemorrhage, gastrointestinal or retroperitoneal bleed.

When a major haemmorhage occurs:

- Thrombolytic therapy must be stopped if it is ongoing.
- Blood samples are sent immediately for CBC, APTT, PT and INR, fibrinogen level and D-dimer. Repeat all these tests every 2 hours till bleeding is controlled.

3. Fibrinolytic state is corrected with cryoprecipitate and fresh frozen plasma.
    a. Give cryoprecipitate 20 units. If fibrinogen level is less than 200mg/dl after 1 hour, repeat cryoprecipitate
    b. Give platelets four units
    c. Give FFP 2 units every 6 hours for 24 hours.
4. Packed RBC transfusion is given if indicated.
5. Appropriate surgical consultation should be sought, e.g. neurosurgical consultation for ICH.
6. Surgery should not be performed until the fibrinolytic state is corrected.

BARTHEL INDEX

ITEM	SCORE	CATEGORIES	DATE			
Bowels	0	Incontinent or needs enemas				
	5	Occasional incontinent (<once per week)				
	10	Continent				
Bladder	0	Incontinent/unable to manage catheter				
	5	Occasional accident (<once per day)				
	10	Continent				
Grooming	0	Needs help with shaving, washing, hair or teeth				
	5	Independent				
Toilet use	0	Dependent				
	5	Needs some help				
	10	Independent on, off, dressing and cleaning				
Feeding	0	Dependent				
	5	Needs some help (e.g. with cutting, spreading)				
	10	Independent if food provided within reach				
Transfer (e.g. bed to chair)	0	Unable and no sitting balance				
	5	Needs major help				
	10	Needs minor help				
	15	Independent				
Mobility	0	Unable				
	5	Wheelchair independent indoors				
	10	Walks with help or supervision				
	15	Independent (but may use aid)				
Dressing	0	Dependent				
	5	Needs some help				
	10	Independent including fasteners				
Stairs	0	Unable				
	5	Needs some help or supervision				
	10	Independent up and down				
Bathing	0	Dependent				
	5	Independent in bath or shower				
TOTAL	100	SCORE				

A Max India Institution

Max Healthcare
Caring for you... for life

THANK YOU