

# Stroke - Modern Management

Pages with reference to book, From 188 To 192

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Stroke can be a devastating illness causing a lot of distress to the patients and their families<sup>1</sup>. Unlike Pakistan, people in western societies usually do not live together in bit families. So the personal and social consequences of any residual disability after stroke can be considerable. If people cannot look after themselves, the state has a duty to care for them in a dignified and humane way as this principle is the cornerstone of modern day western democracies. In the UK 4% of total (36 billion pounds) National Health Service budget is spent on cerebro vascular disease<sup>2</sup>. This does not include the cost of community support services, i.e., nursing homes, etc. With the number of elderly population rising<sup>2</sup> and stroke being predominantly a problem of the elderly<sup>1</sup> these costs are likely to increase. This has prompted research into ways in which the outcome of stroke illness can be improved and the mortality and morbidity reduced, so that more patients can be discharged back into the community. During last few years there have been several studies to achieve these objectives. The socio-economics of western societies do not apply to a country like Pakistan and as yet we cannot match western technology but we can certainly learn and adopt the things which suit us. This article will be based on the needs of Pakistan taking account of limited resources but at the same time incorporating modern developments where ever applicable and possible. The management of stroke illness is a continuous process but the various aspects of care can be subdivided as shown in Table I.

## **Table I. Stroke Management.**

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### **Acute treatment**

**Assessment and establishing diagnosis**

**Investigations**

**Medical treatment**

**Nursing care**

### **Rehabilitation**

**Physiotherapy**

**Speech therapy**

**Occupational therapy**

**Continued nursing care**

### **The concept of a Stroke unit**

### **Long term care**

### **Secondary prevention**

### **Problems, attitudes and resources**

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#### **Assessment and establishing a diagnosis**

This starts with a good history and detailed systemic and neurological examination of patient<sup>3</sup>. The neurological examination should contain specific information about cognitive as well as physical disabilities, including intellectual impairment, dysphasia, dysphagia, apraxia, visual loss, unilateral neglect, agnosia and impaired balance both sitting and standing. This will not only help establish a firm diagnosis on clinical grounds alone but would also help classify the stroke as regard to time course (complete or in-evolution), anatomical location and severity of the lesion<sup>1</sup>. From this it will be possible to identify clinical subtypes (Table II)

**Table II. Stroke subtyping based on maximum deficit<sup>4</sup>.**

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<b>Total anterior circulation infarction (TACI)</b>
- motor and sensory deficit, ipsilateral hemianopia and disturbance of higher cerebral function
<b>Partial anterior circulation infarction (PACI)</b>
- any two of the above
- or isolated disturbances of higher cerebral function
<b>Posterior circulation infarct (POCI)</b>
- unequivocal signs of brain stem disturbance
- or isolated hemianopia
<b>Lacunar infarction (LACI)</b>
- pure motor stroke
- or pure sensory stroke
- or pure sensorimotor stroke
- or ataxic hemiparesis

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based on the clinical findings at the time of maximum deficit as such classification can be important in predicting a patient's prognosis<sup>4</sup>. However, there may be difficulties when using this (all patients may not fit in one or another group) or any classification but this should not dissuade people away from using one at all. This is important because by following such systems, research into various aspect of the illnesses can be organised in a coordinated, orderly and comparable way. Stroke primarily is a clinical diagnosis. Studies using CT scans, in patients with a clinical diagnosis of stroke, give only a low false positive rate between 1 and 5%<sup>5</sup>. Although the factors, given in Table III,

**Table III. Factors that may reduce the reliability of the clinical diagnosis of stroke<sup>5</sup>.**

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<b>Poor history</b>
- impaired conscious level
- dysphasia
- dementia
<b>Unusual symptoms</b>
- persistent headache
- personality change
<b>Unusual signs</b>
- fever
- papilloedema
<b>Young age</b>
- less likely to have degenerative disease
<b>Progressing neurological signs</b>

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may reduce the reliability of the clinical diagnosis<sup>6</sup>, but this is usually due to an inadequate history<sup>7</sup>. The incidence of doubtful diagnosis in UK is around 10%<sup>1</sup>. The differential diagnoses are given in Table IV.

## **Table IV. Differential diagnosis of stroke.**

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**Demyelination**

**Intra-cranial neoplasms**

**Metabolic conditions like hypoglycaemia**

**Drug overdose**

**Head injury**

**Psychiatric problems**

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### **Investigations**

All patients should have a few simple and basic tests, some of which serve as screening for common disorders and risk factors. Others will help clarify situation in cases where the diagnoses are in doubt. These include full blood count, ESR, biochemical screen including glucose, urea and electrolytes, total proteins, syphilis serology (if deemed applicable), chest x-ray and ECG. It is regretted that even these simple tests will be beyond the reach of many in Pakistan. The question arises as to whether CT scan is essential? In an ideal world every stroke patient should have one. But can we afford it? It costs two months wages of an average person in Pakistan and is not available in many big cities including many teaching hospitals. Every effort should be made to install more CT scanners, in all teaching hospitals as a minimum. Until the situation improves it is suggested that Royal College guidelines (Table V)

### **Table V. Royal College of Physicians Guidelines for CT Scanning<sup>1</sup>.**

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- 1. Stroke in evolution, since an intracerebral or extracerebral haematoma may require urgent surgical intervention.**
  - 2. Those with a history suggestive of cerebral or cerebellar haemorrhage (unless the patient is deeply unconscious or has features of irreversible brain stem failure).**
  - 3. Possible subarachnoid haemorrhage (this is the investigation of choice in UK and I would love to have the same here but I think in general we should stick with LP as 1st investigation and angiography prior to surgery as the most cost effective way).**
  - 4. A history of possible head or neck trauma.**
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are used when considering CT scan in stroke. The ideal timing would be within two weeks<sup>1</sup>. Echocardiography should be done in suspected cardiac embolism and in all young patients. It also has a role in unexplained stroke. Doppler studies of the neck arteries and angiography will be discussed under secondary prevention. Specialised tests like vasculitic screen (special antibodies), thrombophilia screen (C. protein, S-protein, lupus anticoagulants and platelet function studies), sickle cell studies (not common in Pakistan) etc., should be considered on an individual patient basis. Some of these investigations are very expensive and their yield small. Despite this, these should be available in teaching hospitals or in provincial capitals on a supraregional basis.

### **Medical treatment**

A variety of interventions including thrombolysis, low molecular weight dextran, anticoagulation,

calcium channel blockers have failed to show any consistent benefit<sup>8</sup>. The results of two trials each with naftidrofuryl<sup>9</sup> and mmodipine<sup>10</sup>, however, showed some reduction in mortality but as yet their general use in stroke is not recommended as further trials with larger number of patients are in progress. So at present no specific treatment can be recommended. However, any associated or causative medical conditions, i.e., diabetes, hypertension, vasculitis, etc., should be treated vigorously. Although it is not appropriate to treat reactionary hypertension overzealously, it is advisable to wait for 24 to 48 hours before treating moderate hypertension as autoregulatory system of brain is not functioning normally and the neurological deficit may worsen on lowering the blood pressure to "Normal"<sup>1</sup>. All patients should be given aspirin or another antiplatelet agent (see later) if they are allergic or intolerant to aspirin in cases of infarction. In embolic (cardiac sources) strokes, anticoagulation is recommended, although there is no consensus on timing, a period of 3 days to a fortnight is usually recommended by most authorities depending upon the size of infarct, presence or absence of haemorrhage in the infarct and the nature of the source of embolism. Cerebral oedema usually accompanies major infarcts, this can be treated with dexamethasone, mannitol or glycerol although their role in improving neurological outcome is questionable<sup>7</sup> and routine use of dexamethasone in stroke (common in Pakistan) should be discouraged as it may be inappropriate in some cases. Surgery is usually not required in the acute stroke with the exception of cerebellar haemorrhage (or infarction) producing acute hydrocephalus. Even here, it is not required in all the cases<sup>11</sup>. The role of surgery in secondary prevention is discussed later. Adequate measures should be taken to prevent DVT as 35-75% patients are at risk. TED stockings, low dose subcutaneous heparin, i.e., 5000 units BD or TID<sup>12</sup> and passive limb exercises are all recommended.

### **Nursing Care**

Good nursing care is vital in the treatment of stroke patients. This is best provided by the staff who are trained to deal with stroke patients. Unfortunately the standards are not particularly high in many parts of Pakistan for many reasons. However, attempts should be made to improve standards as well as working conditions for nursing and ancillary staff. The specific points in nursing care should include:

1. Dysphagia assessment by doctors, nurses or speech therapists. The diet should be modified according to this assessment. The modern world has moved a long way from the times of milk and honey dripped through ordinary plastic NG feeding tubes by the relatives. The use of modern thin bore sialistic tubes is strongly recommended along with modern liquid diets through closed sterile systems. Further suitable pure diets should be developed locally, which can be done simply with a liquidiser.
2. The patients should not in any way be made to feel guilty about their hygiene requirements.
3. Provision of urinals and commodes should not be at the discretion of ward sweeper (requiring a tennor each time optional), as skin soiling predisposes to pressure sores, which are much easier to prevent than treat.
4. Urinary incontinence should be treated with catheter (condom catheter may be suitable in selected cases) and faecal soiling by immediate commode availability, prompt attention and incontinence pads.
5. Relatives may be asked to help in various ways, particularly when considering long term needs, but nursing care in the hospital should primarily remain a nurse's responsibility.
6. Because of the nature of their disabilities stroke patients present particular problems. They are also more time consuming than non-stroke patients on ordinary medical wards. The nursing staff have to be patient, extremely caring and sympathetic toward their needs.

### **Rehabilitation**

There is a wide variation in understanding of the term and ways of its implementation<sup>13-17</sup>. I define this term as a form of formal structured treatment delivered by remedial therapist alongside the continuing nursing and medical care. It should begin as soon as possible after the patient's admission and may have to be continued after discharge, depending upon the patient's disability and progress. The aim of rehabilitation is to minimize disability and handicap and to maximize life satisfaction for both patients

and their carers<sup>16</sup>. Rehabilitation requires the assessment of patient's deficits, planning, intervention and the evaluation of treatment/recovery<sup>15</sup>. It is important to explain to patients and carers that recovery and rehabilitation may be a slow process, that medical intervention is minimum but they will continue to receive remedial therapy daily. Continuous encouragement and support should be provided by all concerned without raising false hopes. Assessment should be carried out as soon as possible after admission. Some of the standardised measures that should be used to monitor patient's progress are given in Table VI.

**Table VI. Assessment Scales.**

<b>Area:</b>	<b>Measure</b>
<b>Motor loss:</b>	<b>Motoricity index and trunk control test<sup>18</sup>.</b>
<b>Neglect:</b>	<b>Star cancellation<sup>19</sup>.</b>
<b>Aphasia:</b>	<b>Frenchay aphasia screening test<sup>20</sup></b>
<b>Confusion:</b>	<b>Hodkinson mental test<sup>21</sup>.</b>
<b>Dependence:</b>	<b>Barthel activities of daily living index<sup>22</sup>.</b>
<b>Mobility:</b>	<b>Rivermead mobility index<sup>23</sup> and measuring time taken to walk 10m.</b>

### **The Concept of a Stroke Unit**

Rehabilitation is a dedicated specialised stroke unit and is a cost effective way of treating stroke patients. An alternative would be a rehabilitation unit excluding acute care. The development of such a unit, its aims, interventions and outcome will differ considerably between Pakistan and western countries. This in part reflects our poor economy and resources but is in part due to our social set-up, religious beliefs, prejudice and neglect for the disabled, so disguising our inadequacies of care for such people. A stroke unit should include medical personnel, nurses, physiotherapists, speech therapists and occupational therapists headed by a neurologist or physician with special interest in stroke. Relatives should be actively involved in handling the patient in the hospital so that they can more easily manage them at home<sup>1</sup>, but all the care should not be left to them. Caring for stroke patients is a stressful process so carers need adequate support. In the course of rehabilitation the natural history, patient's long term hopes and interests, family's wishes, personal and social circumstances should all be considered. The goals should be set in medium and long terms with clear aims and objectives<sup>15</sup>. Poor communication should be avoided all the times. The use of common language by all concerned with regard to patient's progress minimises the chances of such a problem<sup>24</sup>. As most stroke patients are fairly stable, medical input in rehabilitation stage is minimum, so sometimes these patients may feel neglected and at times they really are. Stroke patients are prone to complications such as DVT, pneumonias and depression. These should be actively sought and treated. The attitude of doctors (and indeed everybody else's involved in their care) should be caring and sympathetic. Most of all, patients should not be let to feel that they are being neglected. Although their demands and expectations may be high, their condition should be explained with great tact and skill taking account of their deficit with mental and intellectual faculties (The roles of various remedial services are summarised in appendix). Stroke patients should be assessed on a weekly basis, in a multidisciplinary meeting, achievements confirmed, aims reassessed, objectives and targets changed if necessary. The patients and carers must be updated on their progress (on deterioration, if appropriate). Acute care should merge into rehabilitation which in turn should lead smoothly into home or long term care as appropriate. For some, the process should continue after their discharge home as demanded by their individual disabilities.

### **Long term care**

Stroke reduces life expectancy, but many patients live for long periods with varying degrees of disabilities. They should ideally be cared for at home as this would be the most economic way both for families and state. With our family structure it should be possible to find carers at home (the situation of course is changing with rapid urbanisation). The difficulties usually relate to provision of adequate medical and nursing care. In this respect role of specialised stroke units cannot be over emphasised. This area needs a lot of research locally to find the best local solutions, as western approaches will be too costly and difficult to implement without necessary technical backup. The economic status, dysphagia, cognitive function, mobility, incontinence, expectations of patient and family will all influence the shape of care. The overall improvement in health care budget should be targeted as a priority area alongside provision of aids. Attempts to develop local techniques and equipments should be encouraged as they will certainly be cheaper to acquire and maintain. In all cases the aim should be to keep the patient comfortable, occupied and as independent as possible without undue strds on the family and carers. Sheltered accommodations and nursing homes may be feasible in urbansed areas.

**Secondary prevention (Table VII)**

### **Table VII. Secondary prevention, salient features.**

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**Seek and treat risk factors.**

**Prescribe antiplatelet agents.**

**Consider doppler studies and angiography.**

**Carotid endarterectomy for suitable patients.**

**Anticoagulation for emboli from cardiac sources.**

**Correction of haematocrit.**

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This is an area with enormous scope for improvement. Stroke patients are at risk of early death due to myocardial infarct or a repeat stroke. In general the risk factors to both are common. These should be sought and advice and treatment given as appropriate for smoking, hypertension, hyperlipidaemia, oral contraceptives, obesity and optimum control of diabetes etc. Carotid artery surgery should be considered in patients who are reasonably fit. These details are given elsewhere<sup>25</sup>, but it would seem appropriate to submit suitable patients for doppler studies of neck arteries and subsequent angiography prior to surgery. Antiplatelet drugs should be prescribed to all<sup>1</sup>. There is no advantage using dipyrida mole or sulphinyprazone alone or in combination over aspirin. For those unable to tolerate aspirin, due to allergy or side effects, one of the above or a new drug ticlopidine can be used. Patients with rheumatic heart disease and other cardiac sources of emboli pose special problems. They may be undiagnosed till stroke strikes. They all need long term anticoagulation. Unfortunately the cost and lack of education will preclude this for a long time, however, attempts should be made to set-up anticoagulant clinic and echocardiography should be more widely available. The role of anticoagulants for non-rheumatic a trial fibrillation is still being evaluated although preliminary results suggest a benefit of anticoagulation in primary prevention rather than secondary prevention<sup>26</sup> correction of haematoent if persistent above 0.52 should be undertaken.

#### **The Problems, Attitudes and Resources**

In Pakistan there are- insufficient trained physiotherapists, occupational and speech therapists. Furthennore, there is a general feeling of hopelessness and despair when it comes to managing stroke on ordinary medical wards, people not realising that it is not all doom and gloom. It is taken to be a

disease of old who have had their time and their plight although acknowledged, this is not a high medical priority. Also community care is extremely poor. Provision of aids, i.e., wheel chairs, sticks, zimmer frames, etc., is almost non-existent. There is no suitable support available for long term liquid feeding for dysphagics and anticoagulation. Handicapped people including blind and partiallysighted have no respect in the community. In fact often they are subjected to humiliation and are made figures of fun. Unless we change our attitude toward disability as a nation and show more respect and give these people some dignity, nothing is going to change. However, if we improve our literacy rate and invest more resources into health in general and neurology/stroke treatment in particular, conditions will improve.

## **Conclusions**

Stroke management depends on understanding the causes, pathology, disability, handicap and social circumstances of individual patients. Greater emphasis should be placed on good clinical, practice rather than sophisticated investigations which are not appropriate in the great majority of a poor population except in selected cases, for whom appropriate facilities should be provided. It is a complex process involving many people and a well organised team approach can lead to better results at modest cost. Specialist stroke/rehabilitation units are invaluable. Nursing and ancillary services need to be improved and geared towards the special needs of these patients. More research is needed to develop local strategies for long term care of stroke patients. Secondary prevention should encompass the recent developments. Overall stroke patients deserve more attention and care than at present.

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## **Appendix**

### **Table I.**

The role of the physiotherapist in stroke rehabilitation. 1. Assessment as a basis for treatment after stroke onset to determine:

levels of motor and sensory impairment

Deviations from normal movements and postures

Level of functional disability

2. Early correction of positioning and functional movement

3. Therapeutic programme based on a variety of concepts of treatment including prospective neuromuscular facilitation and bobath which is most commonly used in Britain

4. Use of physical agents such as ice and heat to relieve secondary symptoms such as pain or muscle spasm

5. Provision of aids when appropriate

6. Educating patients, family, carers and professionals

7. Psychological counselling and support for patients, family and carers

### **Table II.**

The role of occupational therapist In stroke rehabilitation

1. Assessment

To determine the degree of disability and the potential to overcome problems of daily living



- a) Physical-perceptual problems, ranges of movement
- b) Activity of daily living status, e.g., eating, dressing, washing, transfers
2. Training therapy  
To help the patient achieve maximum functional ability
3. Home care  
To ensure that patient is safe and independent in the community
- a) Pre-discharge home visit
- b) Provision of aids
- c) Liaison with community services, e.g., structural alterations
4. Psychological support and counselling for patient, family and carers
5. Educating patients, family, carers and professionals

### **Table III.**

The role of speech therapist in stroke rehabilitation

1. Providing detailed assessment of speech, language and swallowing difficulties
2. Advising staff how to handle specific receptive and expressive difficulties in stroke patients
3. Advising and counselling stroke patients, carers and relatives
4. Stimulating recovery by special language techniques
5. Monitoring and reviewing progress
6. Educating patients, family, carers and professionals
7. Provision and maintenance of a means of communication for the patient

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