CASE STUDY ON HEMIPLEGIA

INTRODUCTION

Mr. DO a 50-year-old Fruit Market Manager was admitted to Kenyatta Hospital in December 2003 with recurred left Hemorrhagic Partial anterior circulation infarct (PACI) stroke. His initial stroke was in August 2001. Recurrence of stroke is common in hemorrhagic stroke, Patient in the PACI group stand higher chances of early stroke than the patient with Posterior Circulation Infarcts (POCI) whose risk are greater in the first year after index event (Bamford et. al, 1991). Though the sign and symptoms of stroke largely depends on the size and location of the lesion (Chamber 2003) recurrence of stroke complicated to accruing neurological deficit.

PACI stroke patient usually present with higher cerebral function like dysphasia, visual spatial disorder alone or motor/sensory deficit more restricted to specific areas of the limb and not the whole arm (Bamford et. al 1991).

Stroke rehabilitation is more effective when given by a Multidisciplinary team in the specialized institution, (Edward 2002, Fawcus 200) in our case, we do not have specialized hospital for stroke rehabilitation in Kenya hence patient being managed in general medical wards.

Patient

Mr. DO, a known hypertensive patient, was admitted to the hospital after allegedly complaining of headache for a while thereafter collapsed; his history of present condition is that he was admitted to Nyanza Provincial Hospital in August 2001 where he was diagnosed as having had left haemorrhagic stroke. He was later to be referred to Kenyatta National Hospital in Nairobi (Medical Ward) where he had a 5 months Rehabilitation as an in-patient stay before being discharged in February 2002. He continued attending Physiotherapy outpatient twice in a week since then. He had been diagnosed with a liver disease due to his past heavy drinking habits. He stays with his wife and 4 children in Ongata Rongai (outskirts of Nairobi City).

Brain computer scan (CT scan) taken upon admission revealed a left deep cerebral hemisphere haematoma. Assessment finding after the acute phase: -

My subjective assessment was pegged on patient's own perception of disabilities goals (Wade 1999). Patient identified the following as the functional activities he would wish to achieve: -

- Be able to use his right hand to feed (previously RT handed)
- Be able to ascend & descend stairs with ease
- Overcome excessive fatigue at the end of the day
- He was also keen on going back to his work
- His other major handicap was inability to balance well in poor lit areas, which he wish could be overcome.

Objective Findings

General

Left side – NAD

Right side

Upper limbs - notable ↑ flexor tone – elbow flexed, right hand clenched.

Lower limb - notable ↑ extensor tone (quads) with right foot inverted.

Tone (RT)

Palpation

Upper limbs - ↑ tone RT wrist flexors, fingers, elbow flexor (flexor tone >extensors)
RT thumb – NAD Thumb – NAD

- ↑ tone (RT) pectoralis muscles

Lower limbs - ↑ (RT) ankle plaster flexors, ↑ tone (RT) quads RT foot intrinsic muscles - (N), Hamstrings – (N)

Deep Tendon Reflexes

Upper limbs - RT Biceps ↑++

Lower limbs - RT quads↑ ++, Brisk ankle planterflexors
- Babinski : RT +ve L – (N)

- Clonus (RT) 2 beats = ↑tone Planterflexors

LT – NAD

RANGE OF MOTION

Rt Upper limbs

Shoulder flexion : R_2 140 (painfree)

NB: Tight pectoralis noted on palpation
Elbow flexion/extension - Full JROM
- ↑ Resistance on passive movt.

Wrist: Normal JROM – mild resistance noted in repeated passive movt.

Lt. – NAD

Voluntary Movement - Assessed according to Motor Impairment Stages (Chedoke Mc-Master Stroke Assessment (Gowland 1995))

Rt Upper limbs - stage 4 movement

Lt. Upper limb - (N)

Rt. Lower limb - stage 6

Lt. Lower limb - (N)

NB: Muscle strength could not be assessed because of ↑ tone and inadequate voluntary control.

<u>SENSATION</u>

<u>SOMATIC</u>

Rt. Upper limb - dorsal surface sensation of the hand is reduced more than palmar surface

Rt. Lower limb – ↓ light touch sensation below knee (unable to locate touch).

Left side - NAD

<u>KINAESTHESIA</u>

Rt. Upper limbs	-	Thumb and wrist absent
	-	Elbow joint is reduced
Rt. Lower limbs	-	toe absent
	-	Ankle and knee - reduced
	-	Hip joint - reduced
Left side	-	NAD

Equilibrium

<u>Sitting balance</u>

- Static balance is good though there is ↑ weight on L > Rt buttocks
- Trunk alignment inclined towards the left side

<u>Dynamic Balance</u>

- Patient is reluctant to move Base of support towards Rt side
- ↓ Rt hip abduction activity on displacement to (Rt) side.

NB: Center of gravity is shifted more towards the left side

Standing Balance

Static weight balance distribution left >Rt side.

Dynamic Balance
- Reaching is assymetrical, he is reluctant to shift weight towards the Rt side.
- Displacement Rapid – There is protective stepping left > Rt though it is adequate for standing on an even surface
  Slow - Left is okay, but he is reluctant to align body segments to the Rt side

High Level Balance
Single leg balance Left - 42 seconds (alignment of centre of Gravity over Base of support)
Rt. - Momentarily (can hardly stand for 3 seconds)

Functional Mobility
Supine Lying to sitting
- Can perform independently – uses the strong left trunk side flexors and the left arm to push himself up into sitting.

Sitting to Standing
Independent: Body aligned to the left side when performing task.

Transfers – Independent

Ambulation – Independent

Gait Analysis

Swing Phases Rt lower limb
- Midswing is dominated by flexor pattern of the hip, knee, ankle is dorsiflexed and inverted to ensure floor clearance.

NB: Ground clearance is achieved by a combination of hip hiking and circumduction around the hip joint.

- Movement looks ferky because of the dominant exterior tone.

Swing phase left lower limb
- Swing phase of the unaffected side (L) is short and fast due to his inability to support weight on the affected side (Rt) for long.

Stance Right Lower Limb
- Toes reach the floor first and straight to loading response by passing initial contact (heel strike)

- Knee hyper extends with trunk flexed, pelvis anteriorly rotated & towards the affected limb.

- The forward progression is achieved by knee hyperextension.

Stance Left Lower Limb

Almost normal

Physiotherapy

According to Fawcus (2000) the general Management of stroke was divided into three stages namely medical, rehabilitation and prevention. Physiotherapy has a key role in virtually all these stages though features prominently in Rehabilitation stage. Various approaches to rehabilitations clearly spelt the need for use of valid and reliable assessment tool, teamwork and multidisciplinary goal setting (National Guidelines for Stroke Physiotherapy – royal College of Physician/Chartered Society of Physiotherapy 2000).

Invention

Mr. DO was managed in 2 stages namely Acute and Rehabilitation Phase. Chedoke Mc-Master Stroke Assessment (Gowland 1995) was used as a reliable assessment and measure tool.

Physiotherapy Aims in Acute stage: -
- To prevent respiratory complication
- To prevent circulatory complication
- To ensure proper positioning

Physiotherapy Aims in Rehabilitation stage: -
- To prevent future secondary soft tissue adaptation
- To decrease abnormal muscle tone and promote voluntary movements
- To retrain functional tasks
- To prepare patient and relative for future challenges

Week 1

During this period, Mr. DO was mostly confined to bed, regular and frequent turning combined with techniques of rib springing were given to prevent Respiratory complication (Carr 2000). Passive range of motion exercises was also given and limbs properly positioned to prevent shortening. As soon as he became medically stable, I started giving him active exercises in sitting as it helped reduce Medical complication e.g. Pneumonia and deep venous Thrombosis commonly associated with stroke (Carr 2000). I made efforts to ensure that he understood each and every move I made while exercising him as that helped in prevention of secondary emotional, intellectual and physical deterioration (Heyers 1986).

To ensure that the shoulder joint was prevented from stress, I ensured that it was nicely supported in sitting and avoided handling technique in transfer that could traumatize the joint.

Week 2 – 3

By this time, Mr. DO had developed mark hypertonicity (Synergy) to muscle of both upper and lower limb. Prolonged passive stretch and positioning took care of the hypertonicity and ROM. This also provides him with the sensation of movement on the affected side (Sullivan 1995). Though the effects of sensory stimulation e.g. stroking using a brush have been confirmed not to go beyond the administration time (Matyas et. al 1986) I still gave it. Patient was encouraged to perform most functional activities with uninvolved limbs. By this time patient voluntary movement could be classified in stages 3 according to Chedoke Mc-Master Stroke Assessment.

To improve on his static and dynamic posture in sitting, alternate isometrics, rhythmic stabilization, slow reversal hold exercises were given to the trunk flexors, side flexors and extensor in high sitting (Sullivan 1995). Sit to stand task was also broken in to small tasks and taught with rhythmic initiation and above exercise techniques with a view of enhancing his performance on the task.

Week 4

Since this was a recurrent stroke, Mr. DO had by this time mastered how to ambulate with a walking stick. Even though he could ambulate, I saw the need to improve on his gait pattern as he was also due for discharge as per his doctor's instruction. Mat exercise to improve on his pelvic and trunk strength included side lying; upper trunk forward rotations, pelvic forward rotation with hip flexion using Hold Relax active movement technique. In supine; hook-lying, lateral trunk rotation using alternate isomeric, slow reversal hold techniques and bridging specifically target his gluteus muscles (Sullivan 1995). In standing, short arc squats in modified plantigrade, double standing, single limb balance, stance phase and swing phase exercise were also taught before he was finally discharged to continue with physiotherapy as outpatient for the purposes of monitoring his progress.

<u>Outcome for the Patient</u>

Mr. DO recovery to me seems to have taken relatively shorter period contrary to Poter(2003)'s estimated duration for total Rehabilitation of Stroke which was approximately 6 months. CVA recurrence results to higher mortality rate (Bamford 1991). His speedy recovery may have probably been due to the high level of co-operation and involvement in his management received from his family members (Sullivan, 1995) that took care of the Psychological factors and the perceptual dysfunctions that may have also affected our Rehabilitation programme.

Among the key criteria used in his discharge was the fact that within the time of Rehabilitation he had moved up to stage 6 of motor impairment (Chedoke Mc-Master Stroke Assessment). The strength training were task related and that helped much in his performance in activities like sit to stand, up-and-go test, hence optimising his functional capacity and activities of daily living (Ng et. al 2000). His immediate relatives were also made aware of secondary soft tissues adaptation that may occur should they not be involved in frequent stretching of affected areas.

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