REHAB GRAND ROUNDS

Diagnosis: Left Middle Cerebral Artery Stroke & Encephalopathy

**Interdisciplinary Team**

- Registered Nurse
- Physical Therapist
- Occupational Therapist
- Speech-Language Pathologist
- Dietician
- Neuropsychologist
- Case Manager
Client Information

The patient we will be discussing today is Mrs. PT. She is a 55 year-old Caucasian female who was admitted to Sentara Obici Hospital on 6/11/15 with a left-sided stroke with complications of the middle cerebral artery and encephalopathy. PT’s husband found her unresponsive on the couch. He performed a sternal rub and saw right facial drooping. She was admitted to the ED with altered mental status. Chest X-ray showed infiltrates and she had an increased white blood cell count. Diagnostic tests showed she suffered a left middle cerebral artery stroke with complications from encephalopathy. She was transferred to Riverside Rehab Institution on 7/1/15.

Pathophysiology

Left Middle Cerebral Artery Stroke (Ischemic)

- The middle cerebral artery divides into a right middle cerebral artery and a left middle cerebral artery. The left middle cerebral artery provides blood to a large part of the left side of the brain. The artery divides into smaller artery branches. Based on where the blockage occurs in the artery or in the branches, the effects will vary. Damage most often can cause changes in:
  - Movement and sensation
  - Attention, memory and judgment
  - Perception
  - Speech
  - Vision
Encephalopathy

- Encephalopathy is a term for any diffuse disease of the brain that alters brain function or structure. Encephalopathy may be caused by infectious agent (bacteria, virus, or prion), metabolic or mitochondrial dysfunction, brain tumor or increased pressure in the skull, prolonged exposure to toxic elements (including solvents, drugs, radiation, paints, industrial chemicals, and certain metals), chronic progressive trauma, poor nutrition, or lack of oxygen or blood flow to the brain. The hallmark of encephalopathy is an altered mental state. Depending on the type and severity of encephalopathy, common neurological symptoms are progressive loss of memory and cognitive ability, subtle personality changes, inability to concentrate, lethargy, and progressive loss of consciousness.

<table>
<thead>
<tr>
<th>Past Medical History/ Risk Factors</th>
<th>Past Psychosocial/Family History</th>
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</thead>
<tbody>
<tr>
<td>DM II</td>
<td>Occupation unclear</td>
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<tr>
<td>Neuropathy</td>
<td>Lives with husband who is an alcoholic</td>
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<tr>
<td>GERD</td>
<td>2 sons live in different states</td>
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<td>Gout</td>
<td>Smokes 1 pack/day</td>
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<tr>
<td>History of kidney stones</td>
<td>Drinks occasionally</td>
</tr>
<tr>
<td>Chronic urticaria</td>
<td>History of Depression</td>
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<tr>
<td>Continuous tobacco use</td>
<td>Mother died at 55 y.o. d/t massive heart attack</td>
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<tr>
<td>Obesity</td>
<td>Sister, signs of dementia at 50</td>
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<tr>
<td>Hypertension</td>
<td>Suspcion of noncompliance with medications</td>
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<tr>
<td>Hypercholesterolemia</td>
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<td>Hypothyroidism</td>
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## Physical Assessment

### Assessment

| RN | • Patient is inconsistently alert and only oriented to self  
• Difficulty maintaining attention  
• Right sided facial drooping  
• Right sided hemiparesis; little to absent sensation  
• Uses W/C for mobility and is assist X3 for bedside commode  
• Encouraged to use call bell for assistance but does not always call  
• Attempts to ambulate out of W/C numerous times- requires a chair alarm  
| Medications | • Allopurinol  
• Aspirin  
• Atorvastatin  
• Lipitor  
• Pepcid  
• Neurontin  
• Amour thyroid  
• Sanumet  
• Celexa  
• Insulin  
• Decadron |
| PT | • Requires constant verbal cueing  
• Right sided weakness; unaware of weakness  
• Contracture and tone  
• Able to transfer from W/C to bed with assistance and sliding board  
• Unable to do stand-pivot  
• Main problems are weight-bearing on her left-side and difficulty from shifting between standing and sitting  
• Loses track during exercises  
• Impaired balance  
• Cannot stand for more than 3 seconds with PT |
| OT | • Needs assistance with ADL’s  
• Able to groom but difficulty reaching left side  
• Bathing: receives bath from OT in bed in morning before transferring to W/C  
• Dressing upper body: maximum assistance from W/C level  
• Dressing lower body: maximum assistance from bed  
• Toilet transfer: maximum assist X3 transfer to bedside commode  
• Poor control of left side |
| SPL/Diet | • Fluent aphasia  
• Poor spontaneous speech and object identification  
• Echolalia  
• Cannot state DOB, year, place, president  
• Constantly verbalizes “I don’t understand”  
• Poor control with left side; difficulty swallowing  
• Unable to feed self well and states lack of appetite  
• Thickened, nectar and puree consistency diet |
Identification Of Problems

- Right-sided hemiparesis; not aware of right sided weakness;
- Right-sided tone and contracture
- Unable to feed self
- Difficult to swallow
- Glucose up and down and beginning
- Difficult weight-bearing on left-side
- Unaware of right-side weakness
- Facial drooping
- Frustration, crying b/c cannot have physical/sexual relationship with husband
- Tried to ambulate out of wheelchair numerous times
- Impaired memory
- Difficulty maintaining attention; requires constant verbal cueing
- Poor control of left side
- Impaired balance
- Maximum assistance
- Difficulty shifting b/t standing and sitting
- Unable to stand-pivot

Possible Diagnoses
- Altered Body Image
- Knowledge Deficit/ Impaired Memory
- Impaired Physical Mobility/ Self-Care Deficit
- Safety/ Risk for Falls
- Imbalanced Nutrition/ Risk for Aspiration
- Caregiver Role Strain

PT: 55 yo Caucasian female
Dx: L. MCA Ischemic stroke w/encephalopathy
PMHx: Diabetes Mellitus, neuropathy, GERD, gout, history of kidney stones, chronic urticarial, continuous tobacco use, obesity, hypertension, and hypercholesterolemia

- Intermittent family dynamics
- Wants to return home and have therapy visits
- Husband works 5 nights/week
- Financial problems; before CVA, did not legally grant husband power of attorney, unable to pay hospital bills
- Husband states he has to work more to hire lawyer for guardianship of patient to make healthcare decisions
- Unable to perform ADLs

- Inability to recall history
- Impaired cognitive ability; oriented to self
- Global/fluent aphasia
- Cannot state DOB, year, place president
- Poor spontaneous speech
- Denial and frustration when told she cannot return home upon discharge; she is insistent on staying home with husband and receiving home therapy
- Echolalia makes it difficult to gauge her level of understanding
- Verbalizes lack of understanding of therapy
### Plan of Care/ Interdisciplinary Team

**RN**

Role: coordinates and provides day-to-day patient care; educates patient/family regarding medical and health issues as well as skills needed to provide safe health care; patient advocate

<table>
<thead>
<tr>
<th>Intervention</th>
<th>Rationale</th>
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<tr>
<td>Assess neurological status of patient for decreased cerebral perfusion and potential for increased ICP</td>
<td>Assessment will determine and influence the choice of interventions. Deterioration in neurological signs or failure to improve after initial insult may reflect decreased intracranial adaptive capacity requiring patient to be transferred to critical area for monitoring of ICP, other therapies. If the stroke is evolving, patient can deteriorate quickly and require repeated assessment and progressive treatment. If the stroke is “completed,” the neurological deficit is nonprogressive, and treatment is geared toward rehabilitation and preventing recurrence</td>
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<tr>
<td>Administer medications as indicated</td>
<td>· Aspirin (ASA)</td>
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<td>· Prevents the formation of blood clots; contraindicated in hypertensive patients b/c of increased risk of hemorrhage; PRN for pain and H/A</td>
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<td>· Steroids: Decadron</td>
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<td></td>
<td>· Decreases cerebral swelling</td>
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<td>· CHECK BLOOD SUGAR (DM II)</td>
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<td>Assist patient with mobility/transfers and ADLs. i.e. sliding board</td>
<td>· Important to promote independence while keeping patient safe</td>
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<tr>
<td></td>
<td>· Research*</td>
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<tr>
<td>Assist patient with exercise and perform ROM exercises for both the affected and unaffected sides. Teach and encourage patient to use unaffected side to exercise affected side</td>
<td>Minimizes muscle atrophy, promotes circulation, helps prevent contractures. Reduces risk of hypercalcium and osteoporosis if underlying problem is hemorrhage. Note: Excessive stimulation can predispose to rebleeding</td>
</tr>
<tr>
<td>Set goals with patient and SO for participation in activities and position changes.</td>
<td>Promotes sense of expectation of improvement, and provides some sense of control and independence.</td>
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<td>Anticipate and provide for patient's needs.</td>
<td>Helpful in decreasing frustration when dependent on others and unable to communicate desires.</td>
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<td>Speak in calm, comforting, quiet voice, using short sentences. Maintain eye contact.</td>
<td>Patient may have limited attention span or problems with comprehension. These measures can help patient attend to communication.</td>
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Nursing is ranked second only to industrial work for physical workload intensity and is a high-risk profession for back injury. Compared with the general working population, nurses have a considerably higher prevalence and incidence of back pain and back injuries. Studies show that nurses have approximately 30% more days off due to back pain compared with only 8% of the general population (Lloyd, 2006). Lifting and transferring patients were the two most common mechanisms for back injury among nurses. Due to the nature of their work, including repositioning, transferring, and bathing patients, nurses are required to twist and bend simultaneously at the lumbar region. Also, the combined effect of physical workload and sustained awkward postures imposes a substantial strain on the spinal elements. Lloyd conducted a study to evaluate the efficacy of friction-reducing devices used for lateral patient transfers. An evaluation of 11 lateral transfer technologies or techniques was conducted in the Biomechanics Research Laboratory of the James A. Haley Veterans’ Hospital in Tampa Florida. One male investigator, whose height, weight, and strength were representative of the 50th percentile U.S. adult male performed all lateral transfer tasks. A mannequin was used to represent a dependent patient and was transferred laterally from the bed to a stretcher. Applied force was measured with a dynamometer and postural analysis was prepared from still photography. Mean applied force, spinal forces, and population strength capabilities were calculated. Results show the most efficacious mechanism for lateral patient transfers had extendable pull straps, low-friction material, and optimally located handles. Findings of this study will aid occupational health and safety clinicians and hospital-based caregivers in the selection of appropriate technologies to be used during lateral patient transfers. These devices improve patient safety and reduce the risk of back injury to caregivers (Lloyd, 2006)


<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
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<tbody>
<tr>
<td>Ancevant patient’s perceptions. Reorient patient frequently to environment, staff, procedures.</td>
<td>Assists patient to identify inconsistencies in reception and integration of stimuli and may reduce perceptual distortion of reality.</td>
</tr>
<tr>
<td>Provide psychological support and set realistic short-term goals. Involve the patient’s SO in plan of care when possible and explain his deficits and strength</td>
<td>To increase the patient’s sense of confidence and can help in compliance to therapeutic regimen.</td>
</tr>
<tr>
<td>Avoid doing things for patient that patient can do for self, but provide assistance as necessary.</td>
<td>To maintain self-esteem and promote recovery, it is important for the patient to do as much as possible for self. These patients may become fearful and independent, although assistance is helpful in preventing frustration.</td>
</tr>
</tbody>
</table>
Physical Therapy
Role: maximizes patient function by working with patients to improve gross motor skills; provides modalities for pain management; focuses on mobility
  • Work on standing and weight-bearing on left side; when improved, used a cane; eventually move to parallel bars
  • Transfer on sliding board, work on using affected side to prevent tone and pain; bike

Occupational Therapy
Role: assist patient gain function in areas of ADLs
  • Gym machine; helped to bathe and dress

*PT and OT work together to develop strength, balance, and teaching skills needed for ADLs. Patient works on W/C transfers, whereas OT incorporates what PT has taught patient to practice toilet transfers, and instructs patient on clothing management, personal hygiene. OT and PT collaborate to assist patient to become functional with all components of skills/ADLs.

Speech-language Pathologist (SLP)
Role: evaluates and treats cognition, communication, swallowing disorders, and hearing deficits.
  • Ultimately individualized, picture identification; also with swallowing during meals
  • Communicates with team regarding patient communication needs, how to cue patient when learning on activity, impact of cognitive deficits on ability to learn and retain information. Communicates with team regarding feeding and swallowing disorders and works with physicians, nurses and dieticians about appropriate food and liquid consistencies, compensatory strategies to maintain safe swallow.

Neuropsychologist
Role: evaluates cognitive and behavior status, assists in the adjustment to illness/disability. Provides support to patient and family as they come to grips with issues related to illness/disability.
  • Determine cognitive status and power of attorney

Dietician
Role: oversees patient’s nutritional status and works with physician to provide necessary dietary requirements; provides patient/family education on diets
  • Determines diet; works with SLP; works with patient/family to provide foods of preference within dietary restrictions
Case Manager
Roles: coordinates implementation of treatment plan; communicates insurance benefit information to patient families and the team
  • Discussed with husband about SNF and insurance

Comparison of Client Status from Initiation to End

<table>
<thead>
<tr>
<th></th>
<th>1st Week</th>
<th>2nd Week</th>
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<tbody>
<tr>
<td><strong>PT</strong></td>
<td>• Could not stand for more than 3-4 seconds with PT holding waste</td>
<td>• Was able to stand for 3-4 minutes with minimum assistance from PT and cane</td>
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<td></td>
<td>• Unable to shift b/t sitting and standing; would fall onto bed/chair</td>
<td>• Improved shifting b/t sitting and standing; reaches back to feel surface</td>
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<tr>
<td></td>
<td>• Impaired balance</td>
<td>• Improved balance</td>
</tr>
<tr>
<td></td>
<td>• Poor control of left-side</td>
<td>• Strengthened left side; able to W/C down hallway and back</td>
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<tr>
<td></td>
<td>• Tone and contracture in affected right side</td>
<td>• Tone/contracture still present and now has pain</td>
</tr>
<tr>
<td></td>
<td>• Decreased sensation in right side</td>
<td>• Right hand splint</td>
</tr>
<tr>
<td><strong>OT</strong></td>
<td>• Unable to perform ADLs</td>
<td>• Modified independence with ADL’s</td>
</tr>
<tr>
<td></td>
<td>• Poor control of left side; generalized weakness</td>
<td>• Can groom/bathe but difficulty reaching extremities and right side</td>
</tr>
<tr>
<td></td>
<td>• Maximum assistance X3 to bedside commode</td>
<td>• Improved strength and control in left side</td>
</tr>
<tr>
<td></td>
<td>• Impaired balance</td>
<td>• Able to use sliding board or assistance X1 to bedside commode</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Improved balance</td>
</tr>
<tr>
<td><strong>Speech/Diet</strong></td>
<td>• Fluent aphasia</td>
<td>• Fluent aphasia improved but still present</td>
</tr>
<tr>
<td></td>
<td>• Poor spontaneous speech and object identification</td>
<td>• Improved spontaneous speech and object identification</td>
</tr>
<tr>
<td></td>
<td>• Echolalia</td>
<td>• Decrease echolalia, appears more cognitive</td>
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<tr>
<td></td>
<td>• Cannot state DOB, year, place, president</td>
<td>• Can state DOB, date, year, place, address, telephone number</td>
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<tr>
<td></td>
<td>• Constantly verbalizes “I don’t understand”</td>
<td>• Now verbalizes “I don’t”</td>
</tr>
<tr>
<td>Overall</td>
<td>Did not make much progress</td>
<td>Significant Progress Made: Transfer to Skilled Nursing Facility where she will continue to have PT, OT and speech therapy</td>
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<td>--------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>Poor control with left side; difficulty swallowing</td>
<td>understand but I understand”</td>
</tr>
<tr>
<td></td>
<td>Unable to feed self well and states lack of appetite</td>
<td>Strengthened left side, able to feed self, increase in appetite</td>
</tr>
<tr>
<td></td>
<td>Thickened, nectar and puree consistency diet</td>
<td>Improved swallowing, chopped diet</td>
</tr>
</tbody>
</table>