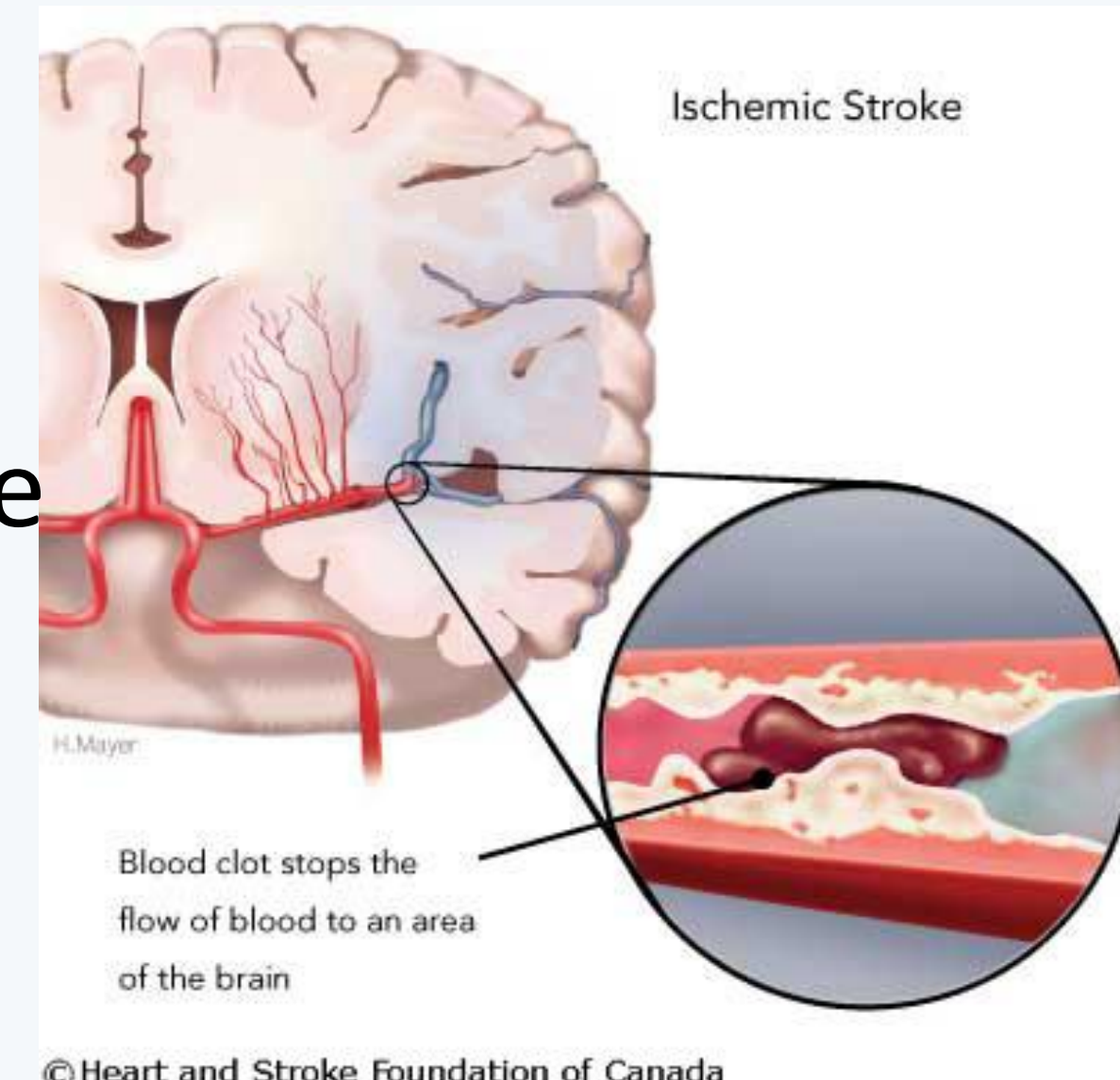# Restoring Gait and Functional Mobility for A Patient with an Ischemic Stroke Through Physical Therapy: A Case Report

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Background

- Ischemic stroke: blood flow is impeded due to blocked artery

- Stroke is the 5th leading cause of death and the primary cause of disability and care dependency in adults in the United States[1]

- Patient age and stroke severity, size, and location are strong predictors in prognosis[2]

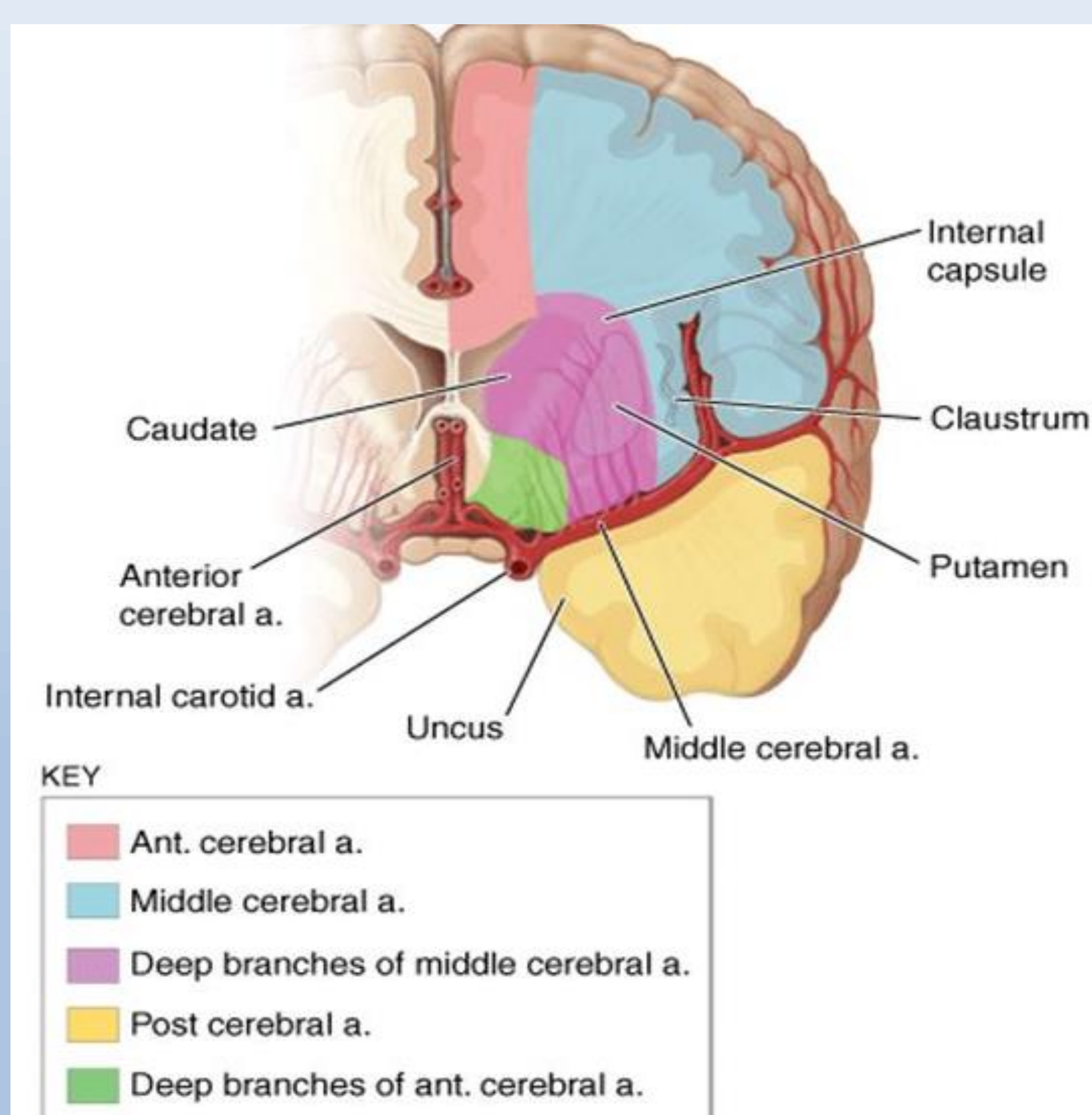- Stroke rehab initiated during first 3 months can reduce mortality[3]

Ischemic Stroke
Blood clot stops the flow of blood to an area of the brain
©Heart and Stroke Foundation of Canada
https://www.google.com/search?q=stroke

Purpose

To provide physical therapy management strategies used during an inpatient stay for a patient who experienced an ischemic stroke.

Case Description

- 50 y/o male
- Left MCA ischemic stroke

- Received daily physical therapy over 3 weeks in the acute rehabilitation setting

- Prior to admission he was completely independent

- Displayed impaired right upper and lower extremity strength, tone, sensation, motor control, and coordination secondary to right hemiparesis. Aphasia, apraxia, and impaired cognition

Internal capsule, Claustrum, Putamen, Caudate, Anterior cerebral a., Internal carotid a., Uncus, Middle cerebral a.
KEY
Ant. cerebral a.
Middle cerebral a.
Deep branches of middle cerebral a.
Post cerebral a.
Deep branches of ant. cerebral a.
https://www.google.com/search?q=stroke

Examination

Tests & Measures	Initial Examination Results	
FIM*	Bed mobility: SPV Sit-to/from-stand: Mod (A) Transfers: Max (A) Static Standing: Max (A) Stair negotiation: 2 stairs Max (A)	
	Left	**Right**
Proprioception	Unimpaired	Impaired
Light Touch	Unimpaired	Absent
Deep Pressure & Localization	Unimpaired	Absent
Coordination (heel to shin)	Unimpaired	Maximally Impaired
Gait Analysis	-Late stance: decreased hip extension -Swing phase: decreased step length -Overall decreased cadence	-Late stance: decreased hip extension, push off, weight bearing, weight shift, narrow base of support (<2 inches) -Swing phase: decreased knee flexion, step length, and foot clearance -Overall decreased cadence

Interventions

Strength
- LE strengthening with and without Bioness in seated and standing.

Balance
- Weight shifting laterally, A/P
- Sitting and standing
- Static and dynamic
- Visual variations

Gait
- W/ rail on left LBQC
- W/ Bioness
- BWSTT/ Robot assisted
- Verbal cueing, repetition, endurance.

Functional Training
- Transfer training and bed mobility
- Variety of surfaces

Other: stair training, neuromuscular activities/ left LE weight bearing

Outcomes

Short Term Goals (1 week):
1. Move from sit to supine with the head of bed flat at the level of supervision. ✓
2. Move from sit to stand with min (A). ✓
3. Perform a stand-pivot with min (A). ✓
4. Ambulate over level surfaces with min (A) over 75 feet (ft.) w/ LBQC. ✓
5. Negotiate 5 steps with a rail on the left with min(A). ✓
6. Ambulate w/ a manual wheelchair over 250 ft. with mod (I). ✓

Long Term Goals (3 weeks):
1. Ambulate 150 ft. with SPV and a large base quad cane (LBQC) to access home environment. ✗
   *(SPV-min(A) w/ LBQC 150ft)
2. Ascend/descend 16 steps with a rail on the left and min(A) to access bedroom on second floor. ✓

- Patient progressed from an overall FIM level of maximum assist to a level of minimum assist/supervision level for functional mobility and gait.
- Patient also displayed improvements with strength, coordination, activity tolerance, cognition, and endurance.

Discussion

Individuals who have experienced a stroke face many variables that will affect recovery. Decreased age can benefit a patient while increased risk factors and severity of stroke can certainly hinder recovery. The use of research supported and patient specific interventions may assist in restoring gait and functional mobility in patients.

Acknowledgements

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