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DATE: March 14, 2006  10:30 AM until noon

LOCATION: Campbell Senior Center, 155 High Street, Eugene, Oregon

SPONSOR: Parkinson's Resources of Oregon Eugene-Springfield Support Group

LECTURE OUTLINE

HISTORY
1.) First described by James Parkinson, physician in London 1817
2.) Description: ".....involuntary tremulous motion, with lessened muscular power, in parts no in action and even when supported; with a propensity to bend the trunk forwards, and to pass from a walking to a running pace, the senses and intellects being uninjured." 2
3.) Parkinson’s (aka paralysis agitans....Disease of the basal ganglia)

SYMPTOMATOLOGY: quite variable.
1.) Rhythmetrical tremor at rest
2.) Flexed “Stooped Posture”
3.) Unique increase in muscle tone or rigidity (i.e. “cogwheel” or “lead pipe” rigidity)
4.) Gait: Festinant or “Festinating Gait” (i.e. shuffling)
5.) Slowness in execution of movement (bradykinesia)
6.) Difficulty in initiation of movement
7.) Difficulty stopping gait: may only stop when come into contact w/ an object or a wall.
8.) Facial expression: “mask-like” w infrequent blinking and lack of expression.
9.) Decreased volume of speech
10.) Autonomic Nervous System changes (postural dizziness, excessive perspiration, greasy skin, heat sensations.
11.) Mental changes (25%) involving short term memory loss, problem solving (brady cognition), loss of enthusiasm, passivity, dependency.

BRAIN/CYTONEURAL DESCRIPTION
1.) Substantia nigra: decreased secretion of Dopamine
2.) 1950’s: 90% of dopamine is localized in basal ganglia  (less than 0.5% of brain)(Arvid Carlsson)
3.) Decreased dopamine, norepinephrine and serotonin (Oleh Hornykiewicz) → first disease associated with a deficiency of a specific neurotransmitter. Neurotransmitter (chemical transmission of information)
4.) This discovery stimulated search for neurotransmitter deficiencies in other disorders of the brain (i.e. depression, schizophrenia, dementia)
5.) L-DOPA - (Walter Birkmayer & Hornykiewicz) gave L-Dopa (L-3,4 hydroxyphenylalanine). Amino acid the precursor to dopamine (crosses blood brain barrier) dopamine does not. Observed brief periods of remission – new treatment. Initially hoped to solve, but did not. Helps control some of symptoms
6.) As many as 90% of the dopaminergic neurons degenerate.
7.) Treatment: Fetal cells
8.) Thalamotomy: reduces the tremor and rigidity, but no improvement in bradykinesia or gait.
9.) Pharmacology: all used to treat rigidity, bradykinesia, tremor, and depression.

PHYSICAL THERAPY
1.) Parkinson’s often not treated until advanced stage of disease of after sustaining hip fracture secondary to a fall.
2.) Primary purpose to reduce disabilities by improving the patient’s ability to function.
PHYSICAL THERAPY EVALUATION
1.) Identifying impairments that are a DIRECT RESULT OF A DISEASE.
   a. Rigidity
   b. Dyskinesia (tremor, choreiform movements)
   c. Akinesia
   d. Postural dysfunction/postural control problems/decreased awareness
   e. Impaired motor program
2.) Impairments: musculoskeletal INDIRECT
   a. muscle length –flexibility
   b. joint mobility
3.) Impairments w/ multiple causes
   a. Decreased Balance
   b. Decreased Reaction Time
   c. Difficulty combining more than 1 movement
   d. Physical Disabilities:
      i. Bed Mobility: unable to move in bed well
      ii. Transfers: unable to safely sit to stand, supine to sit,
      iii. Gait dysfunction
      iv. Eating problems
      v. Swallowing problems
      vi. Speaking problems.
   e. Bony Changes: Osteoporosis
   f. Circulatory Changes: venous pooling

PHYSICAL THERAPY INTERVENTION
1.) Relaxation techniques
2.) Breathing Exercises
3.) Manual Therapy: Restore joint mobility, muscle length
4.) ROM Exercise: Maintain & improve mobility achieved with manual therapy
5.) Weight Shifting Exercise
6.) Trunk mobility: lateral sidebending mobility CRITICAL for “righting reactions” in balance.
7.) Trunk mobility: respiratory/vital capacity
8.) Trunk mobility: rotation critical for power generation in locomotion, step length, & reciprocal arm swing
9.) Balance Responses
10.) Gait Activities
11.) Multi-joint Exercise due to rapid fatigue

REALISTIC GOAL SETTING
1.) Temporary reduction in rigidity with relaxation techniques

CONCLUSION:
Physical Therapy management in conjunction with pharmacologic management can provide the greatest possibility of maintaining functional ability as long as possible. 4

REFERENCES:
1. Guccione, AA. Geriatric Physical Therapy
   Physical Therapy 69(11); Nov 1989; 932- 943

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