and ORAL HEALTH

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OBJECTIVES

• Understand the pathophysiology and epidemiology of Parkinson’s Disease
• Examine the oral/facial manifestations of Parkinson’s Disease
• Explore management options for maintaining oral health in the Parkinson’s Disease patient
KNOW THY ENEMY!

So you can fight back!
ESSAY
ON THE
SHAKING PALSY.

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WHAT IS PARKINSON’S DISEASE?

progressive, disabling neurodegenerative disorder
HOW IS IT DIAGNOSED?

“TRAP”

• Tremor                                no diagnostic test
• Rigidity
• Aknesia
• Postural Instability
HOW IS IT DIAGNOSED?
WHAT IS THE CAUSE?

No one knows!

Theories:
- Genetic predisposition
- Uncertain personal factors (ex. head injury)
- Environmental factors (exposure to pesticides, other neurotoxins)
IS THERE A CURE?

not yet!

Treatment? Yes!

Medications
Nutrition
Movement Therapy
Emotional/psychotherapy
Clinical Trials
Surgery (DBS)
Support organizations
WHO HAS PARKINSON’S
WHO HAS PARKINSON’S

- By 2020 over 1 million in US
  - 10 million worldwide
- 60,000 new cases each year
- 4% diagnosed 50 years or younger
- Men 1.5 X more than women
- Estimated healthcare cost in US: $25 billion

*Parkinson’s Foundation
WHAT DOES PARKINSON’S DO?

progressive, disabling neurodegenerative disorder
DOPAMINE!!!
HOW DOPAMINE WORKS

Normal Brain

- Transmitting Neuron
- Dopamine
- Receiving Neuron

Parkinson’s Brain with reduced dopamine
PARKINSON’S DISEASE ETIOLOGY

Neurons → dopamine → hypocampus/amygdala
(behavior center)

Substantia Nigra

basal ganglia (production of smooth and coordinated body movement)

autonomic nervous system (non-motor)
MOTOR SYMPTOMS

- Tremors
- Muscle rigidity
- Slowness of movement
- Postural instability
- Gait disturbance
- Difficulty swallowing
- Drooling
- Tooth grinding
- Inability to close mouth
NON-MOTOR SYMPTOMS

- Variations in blood pressure (orthostatic hypotension)
- Cardiac dysrhythmias
- Bladder and bowel dysfunction
- Xerostomia
BEHAVIORAL SYMPTOMS

- Depression
- Cognitive impairment
- Dementia
- Medication induced psychosis → disinterest, apathy, forgetfulness → poor oral hygiene
ORAL HEALTH CONSEQUENCES

These associated neuromuscular and cognitive defects:

- Enhance progression of oral disease
- Impair home care regimens
- Encumber in-office dental treatment
OROFACIAL COMPLICATIONS
“MASK-LIKE” FACIAL APPEARANCE
SOFT, HURRIED, MONOTONOUS, WHISPERING VOICE
POOR ORAL HYGIENE
PERIODONTAL DISEASE *TOOTH DECAY*TOOTH LOSS
DIFFICULTY EATING * LOSS OF TASTE AND SMELL
POOR NUTRITION

Chemical Messengers

#1 most important chemical messenger for your body
FOOD!
ABERRANT TONGUE MOVEMENTS
BRUXING (TOOTH GRINDING)
POOR LIP CLOSURE
BURNING MOUTH SYNDROME
TMJ DYSFUNCTION
DRY MOUTH (XEROSTOMIA)
DROOLING ANGULAR CHEILITIS
ILL-FITTING APPLIANCES
HAMPERED DENTAL TREATMENT
PARKINSON’S DISEASE AND ORAL DISEASE

- Dental Caries and Periodontal Disease
- Sialorrhea and Drooling
- Xerostomia
- Burning Mouth Syndrome
- Mastication Disorders
- Bruxism
- Subjective Taste Impairment
DENTAL CARIES

- Fewer teeth and higher caries rate between 60 and 80. \cite{Hanaoke}
- Difficulty maintaining oral hygiene \cite{Hanaoke}
  - Motor impairment
  - Apathy
  - Depression
  - Dementia

As PD progresses \rightarrow Caregiver/family member \cite{Debowes}
PERIODONTAL DISEASE

- Higher rate of periodontal disease between 60 and 80 (Hanaoke)
- Systemic peripheral inflammation \( \rightarrow \) Progression of PD (Ferrari)
  - Alzheimer’s Disease
  - Multiple Sclerosis
  - Stroke
SIALORRHEA AND DROOLING

• Sialorrhea
  • Accumulation of saliva
  • Men twice as likely to develop \(^{(Rana)}\)
  • Extreme cases $\rightarrow$ drooling

• Drooling
  • Nocturnal: 60%
  • Diurnal: 30%
    - Typically 3 years after nocturnal \(^{(Kalf)}\)
    - Associated more severe PD \(^{(Kalf)}\)
SIALORRHEA AND DROOLING

Treatment

- Pharmacological
  - Anticholinergics
    - Ipratropium Bromide
    - Glycopyrrolate
  - Botulinum Toxins A and B (Srivanitchapoom)

- Nonpharmaceutical
  - Radiation (proposed) (Borg)
  - Chewing gum (South)

- Angular cheilitis
  - Mycolog II
XEROSTOMIA

Dry mouth

- Affects 55% with PD\textsubscript{(Friedlander)}
- Twice as likely as general population\textsubscript{(Clifford)}
- Often drug induced
- Associated with dental decay

Treatment

- Ubiquinol (CoQ10) 100mg/day\textsubscript{(Ryo)}
- Sipping water, sugar-free gum, xylitol
BURNING MOUTH SYNDROME

- Burning sensation without physical or laboratory correlates
- Prevalence of 24% with PD\textsubscript{Coon}
  - 8% general population
    - Postmenopausal women and elderly
- Psychological factors
  - Depression, anxiety, compulsive disorders\textsuperscript{Jääskeläinen}
  - Hypothesized cause dopamine dysregulation\textsuperscript{Hagelberg}

Treatment\textsuperscript{Jääskeläinen}
- Capsasain
- Alpha-Lipoic Acid
- Antidepressants
MASTICATION DISORDERS

- Reduced...
  - Jaw mobility
  - Jaw movement speed
  - Tongue mobility

- Complicates...
  - Formation and movement of food bolus
  - Chewing
  - Swallowing

- Impairment correlated with progression of PD\(^{(\text{Bakke})}\)
- Important to keep teeth
BRUXISM

- Abnormal oral activity
  - Clenching
  - Grinding
  - Day and night
- Results in tooth damage, TMJ Disorder (Tan)
- Associated with medications

Treatment
- Oral splints
- Botox (Sheffield)
TASTE IMPAIRMENT

- Reduced or altered sensation
- Causes
  - CNS degeneration
  - Poor oral hygiene
  - Xerostomia
  - Zinc deficiency
  - Medications (Kashihara)
- Effects
  - Loss of appetite
  - Malnutrition
    - Poor fitting dentures
  - Tendency toward carbohydrates (Kashihara)
MANAGEMENT OF ORAL COMPLICATIONS
A MULTIDISCIPLINARY APPROACH

Doctor
- disease stage
- patient’s cognitive status
- disease prognosis
- drug regimen/interactions
- identification of other medical conditions

Caregiver
- diet
- homecare

Dentist
- treatment planning
- consent
MANAGEMENT: POOR ORAL HYGIENE

**Prevention is key**

Maintain good oral health with good home care and regular dental visits throughout life **Recommend 3 month recalls**

- Early stages — self care
  - mechanical aids: toothbrush with large handle, electric toothbrush, access flossers, proxibrusher, \textit{collis-curve toothbrush}
  - chemical aids: fluoride toothpaste, rinses, varnishes, fluoride trays

- Later stages — \textit{the role of the caregiver}
  - assist patient with home care
  - assist patient at dental visits
  - receive oral, written instructions from dental team
The Collis-Curve (TM) Toothbrush

..a breakthrough in preventive dentistry and a leader against dental disease

It's simply a better brush

- Brushes three sides at once
- Easier for care providers
- More comfortable for care recipients
- Half the time to remove plaque than other brushes
- Every study proves increased efficiency

What the Experts say:

*Special Care in Dentistry Magazine* said; "The Collis-Curve and Interplak toothbrushes were the most effective in removing plaque." Vol. 13, No 1, 1993, pg 13

*Journal of the American Dental Association*; "...in the gingival index..the difference was statistically significant with more improvement for students who used the [Collis] curved toothbrush. ...in the plaque index..more improvement is indicated for students who were issued the [Collis] curved toothbrush... The Statistically significant improvement among students using the [Collis] curved toothbrush would appear to be a direct result of the functional efficiency of the brush over that of the regular brush. ...On the basis of results obtained in this study, it appears that the use of the [Collis] curved bristle brush significantly improves the condition of the gingiva and helps in removing dental plaque." - JADA Research Reports, Vol.115. Nov. '87

This brush is perfect for:

- Young children
- People with dental braces
- Caregivers and Parents
- People with limited hand and/or arm motion
- Or anyone!

This is why the Collis-Curve Toothbrush works better:

- The Sulcus is the space between the tooth and gum where bacteria breed causing cavities and bad breath.
- Your dentist uses curved instruments such as a scaler to clean your teeth in the sulcus.
- The cleaning action of the Collis-Curve Toothbrush approximates that of 100 scalers working at once to clean your teeth all over, including in the sulcus!

Design:

- The curved design of the bristles allows you to clean all 3 sides of your teeth at the same while eliminating the danger of poking the bristles into your gums.
- The unique bristle shape and design makes full use of the time the average person spends on their tooth brushing routine and is ideal for everyone.
MANAGEMENT: POOR ORAL HYGIENE

**Prevention is key**

Maintain good oral health with good home care and regular dental visits throughout life. **Recommend 3 month recalls**

- Early stages — self care
  - mechanical aids: toothbrush with large handle
    electric toothbrush
    access flossers
    proxibrusher
    collis-curve toothbrush
  - chemical aids: fluoride toothpaste, rinses, varnishes
    fluoride trays

- Later stages — the role of the caregiver
  - assist patient with home care
  - assist patient at dental visits
  - receive oral, written instructions from dental team
MANAGEMENT OF DENTAL VISIT

**prevention**  **early treatment**  **maintain 3 month recalls**

Often hampered by patient’s ability to keep mouth open, limited opening, tremor, involuntary movement of head, mouth, tongue, difficulty in swallowing, anxiety

ACCESS
• dental office, operatory - handicap accessible
• allow appropriate time to allow patient with slower gait to negotiate trip to dental office, operatory
• caregiver should be present if patient requires assistance to be seated in dental chair

TIMING
• short appointments (no more than 45 minutes)
• morning usually better
• treatment should commence 60-90 minutes after administration of medications

SAFETY
• incline dental chair at 45 degrees to help with swallowing
• extra-oral props, intra-oral bite blocks
• high speed evacuation
• raise chair slowly to prevent orthostatic hypotension

COMFORT
• empty bladder before dental visit
• dentist and staff - identify themselves each time, use simple words, short sentences, smiling, direct eye contact, reassuring touch
• caregiver can be present
ACCESS

- Office and operators handicap accessible
- Allow for “travel time”

- Caregiver there to help!
TIMING AND SAFETY
COMFORT
Working together to make the most of your dental visit:
THANK YOU!

Any Questions or Comments?


