ASSESSMENT AND TREATMENT OF FACIAL PALSY

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FACIAL PARALYSIS - ETIOLOGY

- Bells Palsy
- Ramsay Hunt Syndrome
- Infection (Acute/Chronic)
- Melkersson-Rosenthal Syndrome
- Facial Neuroma
- Acoustic Neuroma
FACIAL PARALYSIS - ETIOLOGY

- Congenital
- Parotid Neoplasm
- Lyme’s Disease
- Sarcoid
- Trauma
- CVA
EVALUATION OF FACIAL PARALYSIS

- Sudden
- Progressive

Associated Symptoms:
- Hearing
- Balance
- Other Neurological Symptoms
EVALUATION OF FACIAL PARALYSIS

PHYSICAL EXAMINATION

- Ear/Nose/Throat
- Neurotological
- Partial vs Complete Paralysis
- Forehead Sparing
- Eye
EVALUATION OF FACIAL PARALYSIS

- Audiogram
- Electrical Testing
- Blood Work:
  - Lyme’s Titer
  - Glucose
- MRI with Contrast (Poor Recovery/Completely Out)
- CT if Fracture Suspected
GRADE I – NORMAL
Normal Function in All Areas
SYSTEM OF HOUSE FOR EVALUATING FACIAL NERVE DEFI CITS

GRADE VI – TOTAL PARALYSIS

Loss of tone, Asymmetry; No Motion; No Synkinesis, Contracture or Hemifacial Spasm
PROGNOSTIC TESTS

- INDICATION FOR THERAPY
- ASSESS BENEFITS OF THERAPY
- DETERMINE EYE CARE
FACIAL NERVE TESTING

- TOPOGNOSTIC (SITE OF LESION) TESTING
- ELECTRODIAGNOSTIC TESTING
TOPOGNOSTIC TESTS

- Schirmer's Test (Lacrimation)
- Salivary Flow
- Stapedial Reflex
ELECTRICAL TESTING

- Assess axons distal to the stylogastoid foramen
- 48-72 hours are needed for Wallerian degeneration
ELECTRICAL TESTING

Only Proceed with Electrical Testing if there is No Facial Movement What-so-Ever
ELECTRICAL TESTING

- NERVE EXCITABILITY TEST
- MAXIMAL STIMULATION TEST
- ELECTRONEUROGRAPHY
- ELECTROMYOGRAPHY
- ELECTROMAGNETIC STIMULATION
MAXIMAL STIMULATION TEST

- Electrical impulses are delivered at increasing current levels until maximal facial movement occurs.
- Movement is judged as equal, slightly decreased, markedly decreased or no movement.
MAXIMAL STIMULATION TEST

- SUBJECTIVE
- TESTS ALL NERVE FIBERS
- MAY (1983)
  - IF MST NORMAL: 92% NORMAL RECOVERY, NO PATIENTS WITH EXTREMELY POOR RECOVERY
  - IF MST ABNORMAL: 86% DEMONSTRATE INCOMPLETE RECOVERY
ELECTRONEUROGRAPHY

- Electrically Evoked EMG
- Supramaximal Stimulation at the Stylomastoid Foramen
- Compound Muscle Action Potential Measured
- Objective
ENoG (1992)

- MOST ACCURATE PROGNOSTIC INDICATOR OF ALL ELECTRICAL TESTS (MST NEXT BEST)

- BELL’S PALSY:
  - 90% OR GREATER DEGENERATION OVER THE FIRST THREE WEEKS
  - THE MORE RAPID THE DECLINE, THE POORER THE PROGNOSIS
FISCH (1981) FOUND IN BELL’S PALSY (cont’d.):

- ONCE PATIENTS REACHED 90% DEGENERATION, 90% PROGRESSED TO GREATER THAN 95% DEGENERATION WITHIN TWO WEEKS.
ENoG

FISCH (1981) FOUND IN BELL’S PALSY

- IF 95% DEGENERATION OCCURS WITHIN THE FIRST THREE WEEKS, 50% OF PATIENTS HAVE UNSATISFACTORY RETURN OF FUNCTION
ENoG

FISCH (1984) FOUND:

- **Velocity of Degeneration (Number of Days It Takes for Degeneration To Occur)** is proportional to the degree of nerve injury.

- **Percent of maximal degeneration (End Point)** is prognostic as to later return of function.
ENoG

EARLY DEBLOCKING

- RETURN OF (SOME) VOLUNTARY FACIAL MOVEMENT IN A PREVIOUSLY PARALYZED FACE IS A GOOD PROGNOSTIC SIGN

- RETURN OF FUNCTION CAN LEAD TO FURTHER ASYNCHRONY AND A REDUCTION OF ENoG WHICH IS CLINICALLY MISLEADING
ELECTROMYOGRAPHY (EMG)

- VOLUNTARY POTENTIALS – IF SEEN WITHIN THE FIRST WEEK AFTER PARALYSIS, THE PROGNOSIS FOR A GOOD RECOVERY IS INCREASED

- FIBRILLATION POTENTIALS – INDICATIVE OF MUSCLE DENERVATION, DO NOT OCCUR UNTIL TWO-THREE WEEKS POST INJURY
ELECTROMYOGRAPHY (EMG)

- REINNERVATION POTENTIALS (GIANT WAVES) – INDICATED NERVE REGENERATION AND MAY OCCUR BEFORE THE ONSET OF CLINICALLY DETECTABLE MOVEMENT

- ELECTRICAL SILENCE – ABSENCE OF MOTOR UNIT END PLATE ACTIVITY
TREATMENT

- OBSERVATION
- STEROIDS
- STEROIDS AND ACYCLOVIR
- FACIAL NERVE DECOMPRESSION
OBSERVATION

SPONTANEOUS RECOVERY – PIETerson Study (1982): 71% HAD COMPLETE RETURN OF FACIAL FUNCTION, 84% HAD SATISFACTORY RETURN
STEROIDS

TRENDS:

- MAY PREVENT DENERVATION
- MAY LESSEN SYNKINESIS
- MAY HASTEN RECOVERY
- MAY PREVENT PROGRESSION FROM INCOMPLETE TO COMPLETE PARALYSIS
- DOES PREVENT CROCODILE TEARING
DICKENS (1989): IV ACYCLOVIR 10 mg/kg q 8 HOURS RESULTED IN A MARKED IMPROVEMENT IN FACIAL PARALYSIS; DUE TO SMALL SAMPLE SIZE, HIS RESULTS WERE NOT STATISTICALLY SIGNIFICANT.
Steroids and Acyclovir

- Adour 1992 NEJM
- Prednisone 60 mg/day + Acyclovir 400 mg 5 times/day
- Prednisone + Acyclovir > Prednisone > Placebo
ACYCLOVIR

- Acyclovir: 800 mg 5 times per day, for two weeks
- Valtrex: 500 mg BID for two weeks, 1 gram TID for HZ0
FACIAL NERVE DECOMPRESSION

- Site of nerve injury in Bell’s palsy is at the meatal foramen (Fisch 1981)
- Middle cranial fossa approach allows decompression of this area
RECENT STUDIES, USING INTRA-OPERATIVE MONITORING, SHOW THE PHYSIOLOGIC CONDUCTION BLOCK TO BE AT THE AREA OF THE MEATAL FORAMEN
Facial Nerve Decompression Study – Patient Selection

- Retrospective Chart Review From 1987-1994
- All Patients Diagnosed with Bell’s Palsy or Herpes Zoster Oticus
- Only Patients with Complete (Grade VI) Facial Paralysis
- >90% ENoG Amplitude Reduction
- Cases of Recurrent Paralysis Excluded
Results - Demographics

- 213 Patient Charts Reviewed
- 48 Patients Met Study Criteria: 24 Male, 23 Female
- Average Age: 52.5 Years
Study Design

- Two Groups of Patients:
  - Patients Undergoing Facial Nerve Decompression
  - Patients Treated Medically Without Surgery

- Three Sub-Groups of Operated Patients:
  - Surgery Within 4 Weeks from Onset of Palsy
  - Surgery from 4 to 8 Weeks from Onset
  - Surgery >8 Weeks from Onset
Study Analysis

- Herpes Zoster Oticus and Bell’s Palsy Patients Considered Separately
- Post-Operative Facial Function Evaluated Using House-Brackmann Scale
- Facial Function Between Surgically Decompressed and Non-Operated Patients was Compared for Each Group
Surgical Technique – Total Facial Nerve Decompression

- Transmastoid Facial Nerve Decompression
- Ossicular Chain Not Disarticulated
- Middle Cranial Fossa Facial Nerve Decompression
- Bone Removed Over Facial Nerve, Nerve Sheath Opened
## Results – Patient Groups

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Conclusions

- Patients Undergoing Surgical Decompression had Improved Facial Outcomes Compared to the Non-Operated Patients
- Early Surgical Decompression (<4 Weeks) Improves Facial Outcome
- Herpes Zoster Oticus Patients have Worse Outcomes in Comparison with Bell’s Palsy Patients
IOWA STUDY

All Patients who Experienced 90% or Less Neural Degeneration in the First 14 Days of Onset of Total Paralysis Recovered Normal (89%) or Near Normal (11%) Facial Function
IOWA STUDY - CRITERIA

- 90% or More Degeneration on ENOG First 14 Days
- No Voluntary Motor Unit Potentials on EMG
- Grade VI Facial Function Clinically
IOWA STUDY

- 19 Patients in Surgical Decompression Group
- 11 Patients in Steroid Group
IOWA STUDY

If Patients Reach 90% Neural Degeneration and have No Voluntary EMG Motor Unit Potentials within 14 Days, 58% have Poor Recovery
RESULTS – IOWA STUDY

- Surgical Decompression: 91% Chance of HBl or HBl
- Steroids Only: 42% Chance of HBl or HBl
RESULTS – IOWA STUDY

- 7 Patients Operated on Between 2-3 weeks Post Onset
- 2/7 Grade II; 5/7 Grade III
- Late Decompression > 2 weeks Shows Results Similar to Medically Treated Group
Conclusions

- ENOG and EMG Good Prognostic Tests
- If > 90% ENOG, No Voluntary Potentials and within 14 days of Onset Facial Nerve Decompression (Middle Fossa +/- Mastoid) is Beneficial; 91% HBI or II vs. 42% HBI or II
Trauma

- CT scan essential
- Most often perigeniculate injury
- Immediate – vs- delayed
- Use electrical testing similar to Bell’s ?? If Enog /EMG good, tx with steroids and follow
Eye Care

- Don’t forget the eye
- Drops/lubricant
- Gold weight insertion
Nerve Repair

- Direct repair—best result. Usually grade 2 to 3. Can get about 1.5 cm in length
- Cable graft. Usually grade 3. Great auricular or sural nerve
- Twelve—Seven nerve graft. Best results before 18 months. Jump graft to the lower face usually gives more power
Facial Reanimation

- Most reliable results with temporalis transposition
- Remember to over correct
- Check patients smile prior to anesthesia
- Can do in combination with gold weight
CONCLUSION

- Multiple ways to reanimate the paralyzed face
- Need to know the status of the facial nerve
- Length of time since the onset of paralysis is also important