Trigeminal Neuralgia

Tic douloureux

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ETA4M3R
History

• 1671- physician Johannes Laurentis Bausch of Germany suffered TN for 4 years and mentioned it in the 1671 volume of the academy of natural science.

• 1677- John Locke first full description of TN

• 1756- Nicolaus Andre a french surgeon is credited with giving TN a clinical entity.
Features

• Paroxysmal, sharp, intense at distribution of trigeminal nerve. Seconds
• Refractory period
• Doesn’t awaken patient at night
• Typically unilateral, can be bilateral but not spontaneously both
• Triggered by chewing, talking, cold air, smiling.
• V1 <5%
• Progression

AKA NEURALGIA EPILEPTIFORME
Differential Diagnosis

- TMJ
- Short-lasting unilateral neuralgiform headache with conjunctival tearing
- Cluster tic syndrome
- Jabs and jolts syndrome.
Classification

• Classic:
  • Idiopathic and vascular compression (85%). (SCA)

• Secondary:
  • Structural lesions other than vascular compression
Other types

• Atypical TN:
  • Unilateral, prominent, constant severe pain superimposed on typical TN pain. Thought to be due to compression of portio minor

• Pre-trigeminal neuralgia:
  • Years before getting TN, some experience odd sensation such as toothache pain and paraesthesia.
• Post-traumatic TN:
• Phantom pain. Anesthesia dolorosa in its severe form.

• Failed TN:
• No relief despite medical and surgical measures.
Epidemiology

- 4-13 / 100,000 cases (15,000 new cases)
- No increase in mortality, secondary depression
- M:F 2:3
- Incidence increase with age, most IDIOPATHIC cases begin after 50.
- Secondary tends to occur at younger age
Pathophysiology

- Compression also MS $\rightarrow$ Demyelination
- Ectopic impulse generation, or,
- Ephatic impulse between light touch and pain fibers.
- Absence of inhibition of pain pathways from the spinal trigeminal nucleus
Anatomy
AAN-EFNS guidelines on trigeminal neuralgia management

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Imaging

• Neuroimaging is advised in abnormal presentation.
• Systematic review by the American Academy of Neurology (AAN) showed that 15% had a secondary cause.
• Insufficient evidence to support or refute routine imaging, for classical TN.
Electrophysiological Tests

- AAN/EFNS concluded that abnormal trigeminal reflex tests is associated with increased risk of secondary TN.
- Evoked potentials was considered not clinically useful in distinguishing classic from secondary.
Medical Therapy

- Carbamezapine
- 200-1200 mg/day
- Level A
- NNT 1.7
- NNH 3.4
  - Drowsiness, confusion, dizziness, nystagmus, diplopia
Oxacarbazepine

- 600-1800 mg/day
- Level B
- Less side effects than Carbamezepine
Lamotrigine

- 400 mg/day, was effective as an add own treatment
- Some trials show it being superior to CBZ in secondary TN
Other

- Baclofen
- Gabapentin
- Dilantin
- Valproate
- Pinozide
- Ophthalmic anesthesia
• 2011
• Compared Tizanidine, tocainide, Pimozode, porparacaine drops with CMZ
• Tizanidine and tocainide were less effective.
• Tocainide and Pimozode had severe side effects
• Pimozode showed more improvement
• Porparacaine didn’t show any significant results
"I was going to sue the neurosurgeon, but then he changed my mind."
John Murray Carnochan

• July 4, 1817 – October 28, 1887
• New York Medical College
• Performed first successful neurosurgery for trigeminal neuralgia
• Transantral approach and resection of the maxillary nerve from foramen rotundum.
James Ewing Mears

- October 17, 1838 - May 28, 1919
- Head and neck surgeon from Pennsylvania
- He was the first to propose the use of trigeminal rhizotomy for the treatment of trigeminal neuralgia
Microvascular decompression

• Reaching the trigeminal root and alleviating the compression by placing a teflon pad.
Percutaneous Glycerol Rhizotomy

- Local anesthesia
- Fluoroscopy guided technique
- Through foramen ovale
- Inject glycerol
- Risk of facial numbness
Percutaneous Balloon Compression

- General anesthesia
- Effective for V1
- Chance of loss of sensation to cornea
- Facial numbness is more than with glycerol
Radiation Rhizotomy
Peripheral Trigeminal Nerve Block

- For high risk patients.
- Injecting the site with alcohol, or cutting the nerve
Microsurgical Rhizotomy

• The first surgical procedure.
• Results in sensation and numbness
• Percutaneous, gamma knife and microvascular. (Level C)
• Microvascular provides the longest pain free interval
• Low quality evidence for neurosurgical intervention.
• All produced variable degree of pain relief
Microvascular decompression for elderly patients with trigeminal neuralgia: a prospective study and systematic review with meta-analysis

Clinical article

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• 1334 patients

• Majority of elderly can undergo MVD
• THANKS