Out of the Blue……

Strikes Tic Douloureux

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Objectives

- At the end of this program the learner will be able to:

1. Describe the functions of the trigeminal nerve
2. Name 3 common triggers of trigeminal neuralgia (TN) pain
3. List 2 implications of TN pain

Overview

- Trigeminal Neuralgia (TN)
- Term "trigeminal" comes from Latin "trigeminus" meaning "threefold," referring to 3 divisions (ophthalmic, maxillary & mandibular)
- Also called Tic Douloureux "Painful twitch"

TN

- Considered one of the most painful conditions seen in medicine
- Disorder of the trigeminal nerve which is the _____ cranial nerve
- V
- http://www.gwc.maricopa.edu/class/bio201/cn/cranial.htm

Functions of CN V

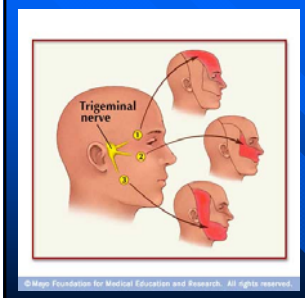
- Chief nerve of sensation for the face
- Motor nerve controlling the muscles of mastication (chewing).

Symptoms

- Intense stabbing pain.
- Affects cheek, mouth, nose, &/or other areas of the face
- Usually on one side
- More common in women than men
- Rarely affects anyone younger than age 50

Characteristics of TN Pain

Trigeminal Nerve



- Upper or 1st branch. Ophthalmic- eyebrow, forehead & upper portion of scalp
- Middle or 2nd branch. Maxillary –upper lip, upper teeth, upper gum, cheek, lower eyelid, & side of nose
- Lower or 3rd branch. Mandibular – lower lip, lower teeth, lower gum & side of tongue. Also a narrow area that extends from lower jaw to in front of ear to side of head

Incidence/Prevelence

- An estimated 45,000 people in the U.S. suffer from TN
- 4.5 of every 100,000 US residents
- Women twice as often as men
- Usually between 5th & 7th decades of life
- Seldom familial

Causes

- Contact between a normal artery or vein & the trigeminal nerve at base of brain
- Pressure placed on nerve & nerve misfires
- Pressure from tumor on nerve
- MS – damage to myelin sheathe
- TN in young adult – possible MS
- Stroke in part of brain where TN enters CNS

Triggers

- Touching the skin lightly
- Washing
- Shaving
- Brushing teeth
- Nose blowing
- Encountering a light
- Applying makeup
- Smiling
- Talking
- Drinking hot or cold beverages

Triggers

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™ Add wind & bitter cold weather!

* Running and jogging

Nursing Considerations

- Understand that TN can affect:
  - Interaction with friends & family
  - Work productivity
  - Oral hygiene
  - Overall quality of life
- Gentle & supportive care through surgical & palliative procedures

Patient Education

- Medications
- Steps to avoid attacks
- Information on support groups & web resources
- **The Facial Pain Association http://www.fpa-support.org/**

Medications

- Initially effective, but over a period of time effectiveness may diminish
- Narcotics not effective

Medications

- Carbamazepine (Tegretol)
- Oxcarbazepine (Trileptal)
- Phenytoin (Dilantin)
- Gabapentin (Neurontin)
- Sodium valporate (Depakote)
- Baclofen (Lioresal)
- Clonazepam (Klonapin)
- Lamotrigine (Lamictal)
- Topiramate (Topamax)
- Antidepressants

Carbamazepine (Tegretol)

- Anticonvulsant
- ↓ polysynaptic response & blocks post-tetanic potentiation
- 100 mg PO bid day 1, then by 100 to 200 mg/d up to 1200mg/d
- Once pt responds, attempt ↓ dose to minimum effective level

Carbamazepine (Tegretol)

- Less effective over time
- Somnolence & ataxia
- Development of allergic reactions or side effects

Skeletal muscle relaxants

- Baclofen (Lioresal)
- Most often used after carbamazepine initiated
- Synergistic effects
- May induce afferent terminals & inhibit monosynaptic & polysynaptic reflexes at spinal level

Palliative treatment options

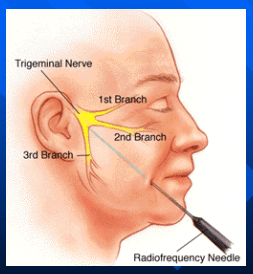
- Glycerol Rhizotomy – surgical technique. Glycerol injected into cavity where TN ganglion lies (central part of nerve from which nerve impulses are transmitted). Nerve bathed with glycerol to damage pain fibers
- Radiofrequency rhizotomy – needle placed through cheek through which electrode inserted to heat the nerve & destroy pain fibers
- Balloon compression – catheter inserted up to trigeminal ganglion & tiny balloon inflated to compress the nerve & damage pain fibers.

Surgical Procedures

- Microvascular decompression
  - Gold standard.
  - General anesthesia
  - Small opening made in back of skull on side of TN pain
  - TN viewed with microscope. Compressing blood vessels are removed & nerve padded with soft pad (typically shredded Teflon).

Glycerol Rhyzotomy

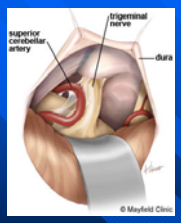
Radiofrequency Rhyzotomy

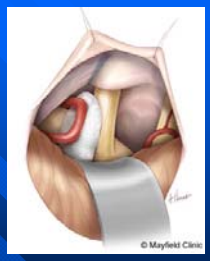


Percutaneous Balloon Compression Rhyzotomy

A balloon is inflated next to the Gasserian ganglion, compressing and mechanically damaging the nervous tissue.

MVD





Gamma Knife

- Minimally invasive
- No incision required
- Highly focused cobalt radiation
- Creates slow formation of a lesion in TN root over period of time to interrupt pain transmission

Gamma Knife

FIGURE 2A: Targeting MR scan during Gamma Knife stereotactic radiosurgery showing the radiation focus spot targeted on the trigeminal nerve root. The yellow line is the 85% dose prescription line and the green line shows the limit for 20% of this dose. The brainstem receives less than 20% of the prescription dose.

Excerpts from patient letter..

Dear Dr._____

Let me start by saying Thank You! From every indication, the Stereotactic Therapy performed on my mother _____ ……appears to be a success. The objective was simply to get her out of constant pain and provide a normal life……today she is moving out of full nursing care and returning to her Assisted Living apartment……

In conclusion, thank you all for helping an elderly woman.

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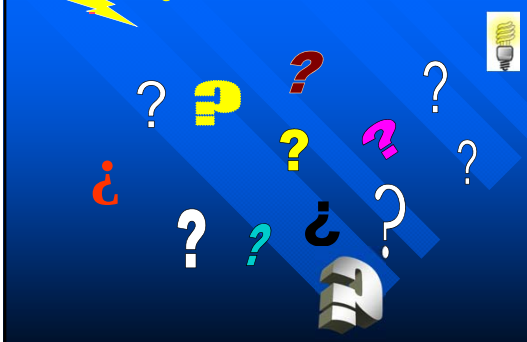
Questions/Comments