NOTES
CRANIAL NERVE INJURY

GENERALLY, WHAT IS IT?

PATHOLOGY & CAUSES

- Brain/cranial nerves injury → neurological dysfunction

CAUSES

- Trauma (accidental, inflicted), autoimmune, infectious, idiopathic

SIGNS & SYMPTOMS

- Varies widely
  - Area-dependent

DIAGNOSIS

DIAGNOSTIC IMAGING

CT scan/MRI

- Specific, focused neurological functioning tests

TREATMENT

- Symptomatic complications, treat underlying causes

BELL'S PALSY

osms.it/bells-palsy

PATHOLOGY & CAUSES

- Lower motor neuron weakness of cranial nerve VII (facial nerve) → acute, peripheral facial palsy
- Adversely affects facial motor activity; lacrimal, salivary glands (parasympathetic fibers); taste (afferent fibers on anterior two-thirds of tongue); external auditory canal, pinna (somatic afferents)
- Etiology unknown
  - Potentially viral-associated ischemia, demyelination (e.g. herpes zoster, herpes simplex (HSV), Epstein–Barr virus, Lyme disease)

RISK FACTORS

- Age (peak incidence > 50), diabetes mellitus, pregnancy (third trimester), early postpartum

COMPLICATIONS

- Corneal exposure → keratitis, motor regeneration → oral incompetence, reinnervation "miswiring" → synkinesis (involuntary muscle movement)
- Incomplete sensory regeneration
  - Dysesthesia (unpleasant/abnormal touch), dysgeusia (distorted taste), ageusia (decreased taste)

SIGNS & SYMPTOMS

- Unilateral facial weakness evolves rapidly over 48 hours
  - Eyebrow sags, eye won't close, mouth corner droops (drooling, difficulty eating/drinking), decreased tear production → ocular dryness, hyperacusis (↓ everyday sound tolerance), ageusia (decreased taste sensation)
- Prodromal symptoms (pre-onset)
  - Ear pain, dysacusis (sound distortion)
- See mnemonic: BELL'S Palsy

MNEMONIC: BELL'S Palsy

Symptoms of Bell's palsy

Blink reflex abnormal
Ear sensitivity
Lacrimation: deficient, excess
Loss of taste
Sudden onset
Palsy: CN VII nerve muscles
(All symptoms are unilateral)

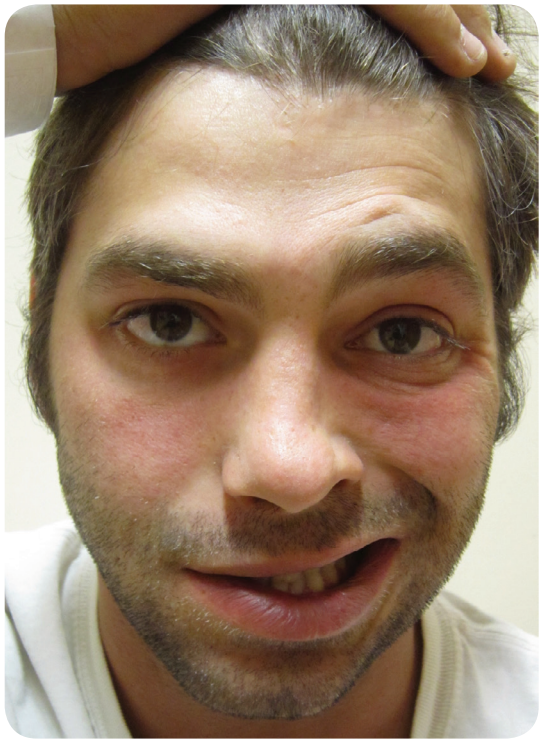

Figure 71.1 An individual with Bell's palsy affecting the right side of the face.

DIAGNOSIS

LAB RESULTS

- Serologic testing if viral infection suspected

OTHER DIAGNOSTICS

- House–Brackmann facial nerve dysfunction classification
  - Grades facial muscle impairment degree
  - Normal, mild, moderate, moderately-severe, severe, total paralysis
- Palpebral-oculogyric reflex (Bell phenomenon)
  - Attempted eyelid closure → upward eye deviation
- Stethoscope loudness test
  - Individual listens to tuning fork through stethoscope
  - Hyperacusis indicates paralyzed stapedius muscle on affected side
- ↓ pinprick sensation in posterior auricular area
- ↓ taste
  - Sweetness, saltiness, acidity
- Motor nerve conduction studies (NCS)
  - Estimates axonal loss degree

TREATMENT

MEDICATIONS

- Corticosteroids
  - Symptom onset → begin within 3–4 days

OTHER INTERVENTIONS

- Artificial tears, eye patching
  - Reduce corneal damage risk
- Physical therapy (e.g. facial exercise, neuromuscular retraining)
- May resolve spontaneously within three weeks

TRIGEMINAL NEURALGIA

osms.it/trigeminal-neuralgia

PATHOLOGY & CAUSES

- AKA tic douloureux; stimulating facial trigger zone → intense, stabbing, paroxysmal pain in trigeminal nerve (cranial nerve V—usually V2/V3 subdivisions)
  - *Triggers:* touching/moving tongue, lips, face; chewing; shaving; brushing teeth; blowing nose; hot/cold drinks

TYPES

- Classic
  - Most common; unknown etiology, artery/vein compressing cranial nerve (CN) V root may → pain
- Secondary
  - Nonvascular lesion compressing nerve → pain

RISK FACTORS

- Biological sex (female > male)
- Age (peak incidence 50–60)
- Demyelinating disorders (e.g. multiple sclerosis)
- Postherpetic trigeminal neuropathy
- Acoustic neuroma
- Saccular aneurysm
- Vestibular schwannoma

SIGNS & SYMPTOMS

- Pain paroxysms
  - Last one–several seconds; may repeat; usually unilateral
- Dull pain between paroxysms
- Facial muscle spasms/autonomic symptoms (e.g. lacrimation, diffuse conjunctival injection, rhinorrhea)

DIAGNOSIS

DIAGNOSTIC IMAGING

CT scan/MRI

- May identify lesion/vascular compression
- Electromyographyrigeminal reflex testing
  - Measures muscles', controlling nerves' electrical activity

OTHER DIAGNOSTICS

- Classic trigeminal neuralgia
  - No clinically evident neurologic deficit, no better explanation via another diagnosis, ≥ three attacks of unilateral facial pain fulfilling criteria A and B
  - *A:* Occurs in ≥ one trigeminal nerve divisions, no radiation beyond trigeminal distribution
  - *B:* Pain has three or more of the following four characteristics: recurring paroxysmal attacks (< two minutes); severe intensity; shock-like, shooting, stabbing, sharp pain; stimulating affected facial side → > two attacks (other attacked may be spontaneous)

TREATMENT

MEDICATIONS

- Pain management

SURGERY

- Microvascular decompression
- Neuroablation
  - Rhizotomy with radiofrequency thermocoagulation/mechanical balloon compression/chemical (glycerol) injection
  - Radiosurgery
  - Peripheral neurectomy, nerve block