Head and Neck Exam

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Observation and Palpation

• Inspection face & neck:
  – Does anything appear out of ordinary in Head & Neck?
  – Bumps/lumps, asymmetry, swelling, discoloration, bruising/trauma?
  – anything hidden by hair?

Note right sided neck/jaw area swelling and R v L asymmetry

• Inspection & palpation of scalp, hair
Lymph Nodes of Head & Neck - Physiology

- Major lymph node groups located symmetrically either side of head & neck.
- Each group drains specific region
Lymph Node Enlargement – Major Causes

- **Enlarged if inflammation** (most commonly infection) or **malignancy**
  
  **Infection**: Acute, tender, warm
  
  - Primary **region drained** also **involved** (e.g. neck nodes w/strep throat)
  
  - Sometimes **diffuse** enlargement w/**generalized infection** or systemic inflammatory process (e.g. TB, HIV, Mono)

**Malignancy:**

- **Slowly progressive**, firm, multiple nodes, stuck together & to underlying structures.

- **Primary** site malignancy could be **nodes** (e.g. lymphoma) **or adjacent** region (e.g. intra-oral squamous cell ca)
Lymph Node Anatomy & Drainage

Ant Cerv → Throat, tonsils, post pharynx, thyroid
Post Cerv → Back of skull
Tonsillar → Tonsils, posterior pharynx
Sub-Mandibular → Floor of mouth
Sub-Mental → Teeth
Supra-Clavicular → Thorax
Pre-Auricular → Ear
Lymph Node Exam

• Gently walk fingers along general regions – comparing R to L
Function CN 7 – Facial Nerve
Facial Symmetry & Expression - Precise Pattern of Inervation

R UMN

R LMN - Forehead

R LMN - Face

L UMN

L LMN - Forehead

L LMN - Face
CN 7 – Exam

• Observe facial symmetry
• Wrinkle Forehead
• Keep eyes closed against resistance
• Smile, puff out cheeks

Cute.. and symmetric!
Comparison of a patient with (A) a facial nerve (Bell’s Type - LMN) lesion and (B) a supra-nuclear (UMN) lesion w/forehead sparing


Upper Motor Neuron (UMN)

Lower Motor Neuron (LMN)

Note forehead and lower face are affected on the right, which is same side of the LMN lesion

Note forehead sparing on right side, opposite the UMN lesion
Pathology: Peripheral CN 7 (Bell’s) Palsy

Patient can’t close L eye, wrinkle L forehead or raise L corner mouth → L CN 7 Peripheral (i.e. LMN) Dysfunction

Central (i.e. UMN) CN 7 dysfunction (e.g. stroke) - not shown: Can wrinkle forehead bilaterally; will demonstrate loss of lower facial movement on side opposite stroke.
Function CN 5 - Trigeminal

• Sensation:
  – 3 regions of face: Ophthalmic, Maxillary & Mandibular

• Motor:
  – Temporalis & Masseter muscles
Function CN 5 – Trigeminal (cont)

Motor

Temporals (clench teeth)
Masseter (move jaw side-to-side)

Sensory

Ophthalmic (V1)
Maxillary (V2)
Mandibular (V3)

Corneal Reflex: Blink when cornea touched - Sensory CN 5, Motor CN 7
Temporalis & Masseter Muscles

Courtesy Oregon Health Sciences University:
http://home.teleport.com/~bobh/
Testing CN 5 - Trigeminal

• Sensory:
  – Ask pt to close eyes
  – Touch ea of 3 areas (ophthalmic, maxillary, & mandibular) lightly, noting whether patient detects stimulus.

• Motor:
  – Palpate temporalis & mandibular areas as patient clenches & grinds teeth

• Corneal Reflex:
  – Tease out bit of cotton from q-tip - Sensory CN 5, Motor CN 7
  – Blink when touch cornea with cotton wisp
The Ear – Functional Anatomy and Testing (CN 8 – Acoustic)

- Crude tests hearing – rub fingers next to either ear; whisper & ask pt repeat words
- If sig hearing loss, determine Conductive (external canal up to but not including CN 8) v Sensorineural (CN 8)

Great Moments In The History of Hearing

Uncle Bill Hears Aunt Ruth!
CN 8 - Defining Cause of Hearing Loss - Weber Test

- 512 Hz tuning fork - this (& not 128Hz) is well within range normal hearing & used for testing
  - Get turning fork vibrate ➔ striking ends against heel of hand or
    Squeeze tips between thumb & 1st finger
- Place vibrating fork mid line skull
- Sound should be heard =ly R & L ➔ bone conducts to both sides.
CN 8 - Weber Test (cont)

• If **conductive** hearing loss (e.g. obstructing wax in canal on L) → louder on L as less competing noise.

• If **sensorineural** on L → louder on R

• Finger in ear mimics conductive loss
CN 8 - Defining Cause of Hearing Loss - Rinne Test

- Place vibrating 512 hz tuning fork on mastoid bone (behind ear).
- Patient states when can’t hear sound.
- Place tines of fork next to ear → should hear it again – as air conducts better than bone.
- If BC better then AC, suggests conductive hearing loss.
- If sensorineural loss, then AC still > BC

Note: Weber & Rinne difficult to perform in Anatomy lab due to competing noise – repeat @ home in quiet room!
Examining the External Structures of The Ear - Observation

Note: Picture on L → normal external ear; picture on R → swollen external canal, narrowed by inflammation
Internal Ear Anatomy

Image Courtesy: Online Otoscopy Tutorial
http://www.uwcm.ac.uk:9080/otoscopy/index.htm
Normal Tympanic Membrane

Images courtesy American Academy of Pediatrics
http://www.aap.org/otitismedia/www/
Selected Tympanic Membrane Pathology

Normal

Wax

Acute Otitis Media

Otitis Media With Perforation
Using Your Otoscope

• Make sure battery’s charged!
• Gently twist Otoscopic Head (clockwise) onto handle
• Twist on disposable, medium sized speculum
• Hold in R hand → R ear, L hand → L ear
Otoscope W/Magnified Viewing Head

- Advantage ➔ magnified view, larger field
- Speculum twists on; viewing same as for conventional head
- Rotate wheel w/finger while viewing tympanic membrane to enhance focus (default setting is green line)
Otoscopy Basics

• Make sure patient seated comfortably & ask them not to move
• Place tip speculum in external canal under direct vision
• Gently pull back on top of ear
• Advance scope slowly as look thru window – extend pinky to brace hand
• Avoid fast, excessive movement – Stop if painful!
Look Dad - Otoscopy Sure is Easy!

The Nose

- **Observe external structure for symmetry**
- **Check air movement** thru ea nostril separately.
- **Smell** (CN 1 – Olfactory) not usually assessed (unless sx)
  - use coffee grounds or other w/distinctive odor
    (e.g. mint, wintergreen, etc)
  - detect odor when presented @ 10cm.
- **Look into each nostril** using **otoscope** w/speculum – note color, septum (medial), turbinates (lateral)
Sinuses

- Normally Air filled (cuts down weight of skull), lined w/upper respiratory epithelium → keeps antigens/infection from lung
- Maxillary & frontal accessible to exam (others not)
- **Exam only done** if concern re sinus infection/pathology

**Anatomy**

Image: Williams, J. JAMA 270 (10); 1993: 1242-46
Sinuses (cont)

If there is concern for acute sinusitis (purulent nasal d/c, facial pain/fullness, nasal congestion, post nasal drip, cough, sometimes fever):

- **Palpate** (or percuss) sinus → elicits pain if inflamed/infected
- **Trans-illuminate** → normally, light passes across sinus → visible thru roof of mouth.
  Infection → swelling & fluid → prevents transmission
- **Room** must be dark
- Placed otoscope on infra-orbital rim while look in mouth for light

Note: Not possible to see transmitted light if room brightly lit (e.g. the anatomy lab) – try this @ home in dark room!
Oropharynx

- Inspect posterior pharynx (back of throat), tonsils, mucosa, teeth, gums, tongue – use tongue depressor & light – otoscope works as flashlight (on newer Welch Allyn, head twists off)
- Can grasp tongue w/a gauze pad & move it side to side for better visualization
- Palpate abnormalities (gloved hand)
Oropharynx: Anatomy & Function CNs 9 (glosopharyngeal), 10 (vagus) & 12 (hypoglossal)

- **Uvula midline** - CN 9
- Stick out tongue, say “Ahh” – use tongue depressor if can’t see
  - palate/uvula rise - CN 9, 10
- **Gag Reflex** – provoked w/tongue blade or q tip - CN 9, 10
- **Tongue midline** when patient sticks it out → CN 12
  - check **strength** by directing patient push tip into **inside** of **either cheek** while you push from outside
Selected Pathology of Oropharynx

L CN 9 palsy – uvula pulled to R

L peri-tonsilar abscess – uvula pushed to R

L CN 12 palsy – tongue deviates L
Parotid and other Salivary Glands

- Contribute saliva to food
- Drain into mouth via discrete ducts
  - Parotid → next to upper molars
  - Submandibular → floor of mouth
- Glands not easily palpable
- Painful &/or swollen if: obstruction, inflammation, infection or cancer

Images from LSU School of Medicine:
www.medschool.lsuhsc.edu/.../docs/parotitis.pptx

Wharton’s Ducts (sub-mandibular)
Stensens’s Duct (parotid)
What about the Teeth?

- Dental health has big implications:
  - Nutrition (ability to eat)
  - Appearance
    - Self esteem
    - Employability
    - Social acceptance
  - Systemic disease → endocarditis, ? other
  - Local problems:
    - Pain, infection
- Profound lack of access to care → MDs primary Rx
Dental Anatomy & Exam

• 16 top, 16 bottom
• Examine all
  – Observation teeth, gums
  – Gloved hands, gauze, tongue depressor & lighting if abnormal
• Look for:
  – General appearance
    • ? All present
    • Broken, Caries, etc?
  – Areas pain, swelling → ? infection
    • Localize: ? Tooth, gum, extent

http://www.nytimes.com

http://www.nlm.nih.gov/medlineplus
Common Dental Pathology

Caries: Breakdown in Enamel
American Family Physician: Common Dental Emergencies
http://www.aafp.org/afp/20030201/511.html

Facial Swelling (left) Secondary to Tooth Abscess
Thyroid Anatomy

Image: Strome, T. NEJM 344; 2001: 1676-79
Thyroid Exam

- **Observe** (obvious abnormalities, trachea)
- From front or behind → **Identify landmarks** (touch and vision)
- **Palpate** as patient swallows (drinking water helps)
- ? Focal or **symmetric enlargement, nodules.**
Neck Movement
(CN 11 – Spinal Accessory)

• **Turn head to L into R hand** → function of **R Sternocleidomastoid (SCM)**

• **Turn head to R into L hand** (**L SCM**)

• **Shrug shoulders** into your hands
Summary Of Skills

- Wash hands
- Observation head & scalp; palpation lymph node, parotid and salivary gland regions
- Facial symmetry, expression (CN 7)
- Facial sensation, muscles mastication (CN 5)
- Auditory acuity; Weber & Rinne Tests (CN 8)
- Ear: external and internal (otoscope)
- Nose: observation, nares/mucosa (otoscope), smell (CN 1)
- Sinuses: palpation, trans-illumination (*bag of tricks*)
- Oropharynx: Inspection w/light & tongue depressor → uvula, tonsils, tongue (12); Inspect Teeth, Salivary gland ducts; Tongue movement (CN 12); “Ahh” & Gag reflex (CNs 9, 10);
- Thyroid: Observation, palpation
- Neck/Shoulders: Observation, range motion, shrug (CN 11)
- Wash hands

Time Target: < 10 min