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Herpes Zoster

Pamela Fry, MD
Objectives

• Discuss interesting case(s)
• Review epidemiology, pathophysiology, diagnosis, treatment, and prognosis of condition(s)
  – Review of literature
• Apply information to clinical practice
Case #1: QM

- 69 YO man presents with AMS + fever x2 days
  - Confusion
  - Disorientation
- Gait ataxia
- Difficulty with fine motor skills
- Blurry vision
- Left ear pain & deafness
- 7 days ago pt had a root canal performed
Case #1: QM

- PMH: Hypertension, Hyperlipidemia, Diabetes
- PSH: none
- Allergies: NKDA
- Medications: Atenolol, Glyburide, Lisinopril/HCTZ, Metformin, Losartan, Simvastatin
- Social: Married. Retired professor. No tobacco, ETOH, or drugs
- Family Hx: negative
Differential Diagnosis

• Infection
  – UTI
  – Pneumonia
  – Meningitis
  – Encephalitis
  – Malignant Otitis External
  – Mastoiditis
  – Lyme disease

• Vascular
  – Stroke

• Metabolic
  – Electrolyte abnormalities
  – DKA, HONK
  – Thyroid

• Toxins

• Neurodegenerative
  – Dementia
  – MS
Physical Exam

- VS: T 98.1, HR 90, RR 16, BP 119/69, O2 sat 98% RA
- General: Lying on stretcher in mild distress with obvious rash and swelling on left side of face.
- HEENT: NC/AT, EOMI, PERRL, **ptosis** of left eyelid with tearing & blurry vision; crusted, vesicular rash in distribution of 3rd division of trigeminal n on left, **swollen and erythematous left ear canal, pain with manipulation of left pinna**
- Neck: No meningismus signs
- CV: RRR, no m/r/g
- Lungs: CTAB
- Abdomen: soft, NT/ND, no masses
- Neuro: A/Ox2, slow to respond, CN intact except for slight lower facial weakness and numbness to light touch, decreased hearing in left ear, normal strength, **ataxic gait**
Imaging/Lab Results:

- Head CT: No acute findings
- CBC: WBC 10.3, Hgb 13.3, Plts 230
- Basic: Na 127, K 3.0, Cl 87, CO2 25, glucose 60, BUN 17, Cr 1.20
- UA: negative
- Blood cultures: pending
- CSF: Pink, hazy fluid
  - Protein 100, Glucose 25
  - Tube 1: RBC 12,700, WBC 250
  - Tube 4: RBC 7,600, WBC 265
  - Viral cultures: +VZV
Herpes Zoster

• CDC: 32% of all Americans

• Risk Factors\(^2\):
  - Age, especially >50
  - Female > Male
  - White > Black
  - Immunosuppression
  - Chronic lung or kidney disease
  - Prior episode of shingles
  - Poor diet

Shingles: Reference. Available online at: www.thefullwiki.org/_Shingles
Impact of Varicella Vaccine

• NEJM 1991 study: 548 children with ALL\(^2\)
  - 13 children (2.4%) developed zoster
  - Subgroup analysis: 96 vaccinated children matched with natural varicella infection
    • 4 immunized children had zoster
    • 15 natural children had zoster

• NEJM 2005 study: 38,000 pts \(\geq 60\)^2
  - Reduced zoster incidence by 50%
  - Reduced postherpetic neuralgia incidence by 66.5%

• CDC: varicella incidence decreased from 2.63 cases to 0.92 cases/100–person years

• CDC: zoster incidence stable

• Vaccine recommended for healthy adults \(\geq 60\)

Shingles: Reference. Available online at: www.thefullwiki.org/_Shingles
Pathophysiology

![Diagram of skin layers and nerve fibers with labeled parts](https://commons.wikimedia.org/wiki/File:Skin_layers.png)
VZV Meningoencephalitis

• Bimodal age distribution: teens & 70’s–80’s\textsuperscript{6}
• Risk Factors\textsuperscript{1}:
  - Immunosuppression, including HIV
  - Cranial or cervical dermatome involvement
  - 2 or more prior episodes of shingles
  - Disseminated zoster

• Can occur more than 6 months after rash
• Clinical Features\textsuperscript{6}:
  - HA 86%
  - Fever 86%
  - Confusion 57%
  - Neck stiffness 29%
  - Photophobia 57%
  - Focal neurological signs 14%
VZV Meningoencephalitis

- **Diagnosis:** LP with VZV PCR
- **MRI** to exclude vasculitis & infarct

**Treatment:**
- IV Acyclovir 10mg/kg TID for at least 10–14 days
- Steroids are controversial
- +/- anticonvulsive medication

**Prognosis**
- Mortality 9–10%
- 1/3 of pts will have persistent neurological symptoms at 3 months
Complications of VZV

Postherpetic neuralgia

- Pain beyond 4 months of initial rash
- 10–15% of VZV infections
- 50% of cases occur in pts older than 60
- Antivirals to reduce incidence severity & duration
  - Valacylovir superior to acyclovir
- Steroids: no change in incidence or duration
Complications of VZV

Bacterial Super-infection

- Very common complication
- Treat with antibiotics
- Steroid treatment is major risk factor
Complications of VZV

Hutchinson’s sign

Ophthalmic HZO

- 8–56% of VZV infections
- Conjunctivitis, episcleritis & lid droop
- 66% corneal involvement
- 40% iritis
- PO antiviral therapy, ophthalmology referral, +/- topical steroid drops
Complications of VZV

Ramsay Hunt Syndrome

• Triad:
  - Ipsilateral facial paralysis
  - Ear pain
  - Vesicles in auditory canal/auricle or hard palate, or anterior 2/3 of tongue

• Neuropathy of CN V, IX, X
  - Tinnitus, hyperacusis, lacrimation, taste perception, vertigo

• More severe than Bell’s palsy

• Tx: Antivirals + Steroids
  - Treat within 3 days of symptom onset
Complications of VZV

Oticus

- Zoster infection of ear without neuropathies
- Tx: Antivirals + Steroids
- ENT consult
- Limit tactile stimulation
- Audiogram if hearing affected
- May require canal debridement after vesicles resolve
Isolation Precautions

- Varicella infection
  - Infectious from 24–48 hours prior to onset of rash to 5 days after onset of rash
  - Once vesicles are crusted over they are no longer infectious
  - Immunocompromised pt will be infectious longer

- Zoster infection
  - Risk of transmission is 1/3 that of varicella

- Transmission is both airborne and through contact

- CDC recommends negative pressure room with airborne & contact precautions for varicella, disseminated zoster, & immunocompromised.
  - Contact precautions only for immunocompetent zoster patients.
Case #1: QM Case Update

- ID consult: VZV Meningoencephalitis
  - IV Acyclovir x 2 weeks
  - PO prednisone x 1 week
  - No super-infection
- Neurology consult: Ramsay–Hunt Syndrome
  - MRI: Bilateral and left vestibulocohlear nerve enhancement
- Ophthalmology: Mild conjunctivitis, no iritis or keratitis, visual acuity 20/30 both eyes
  - Artificial tears
- ENT: Outpatient follow-up for possible debridement
- Pt had improvement of AMS, ataxia, hearing loss, facial paralysis, and blurry vision
- Discharged after 3 days with IV meds at home
Summary

• All people >60 years old should receive a varicella vaccination booster
• All zoster infections should be treated with antivirals
• Use steroids on a case–by–case basis
• Look at the ears!
• Zoster infections don’t always have a rash
• Infectious period is 24–48 hrs before rash until vesicles crust over
• Admit to negative pressure rooms with airborne and contact precautions
Case #2: DF

Eszter Hargittai, Flickr
Case #2: DF

• CC: Chest pain
• 23 YO man presents with left-sided pleuritic chest pain x 3 days
  - 6 weeks of URI symptoms, malaise, and fatigue, DOE, night sweats, decreased PO intake
  - Cough productive of yellow-brown phlegm
    • +occasional hemoptysis
  - No fevers, chills, wt loss, GI/GU symptoms, rash
• Saw PMD 2 days ago
  - Prescribed Z-pack & Mucinex for tonsillitis
  - No improvement in symptoms
Case #2: DF

- **PMH:**
  - Gilbert’s syndrome
  - Anxiety
- **PSH:** none
- **Allergies:** NKDA
- **Medications:** none
- **Family Hx:** negative for blood clots
- **Social Hx:**
  - ETOH socially
  - Rare cigarettes in past, but not recently
  - MJ use in past, but not recently, no other drugs
  - works at a manufacturing company
  - lives with parents
Physical Exam

- **VS:** T 98.7, HR 90, BP 102/70, RR 18, O2 sat 98% RA, Ht 80”, Wt 166 lbs, BMI 18
- **General:** Uncomfortable appearing
- **HEENT:** NC/AT, PERRL, EOMI, TM clear bilaterally, nares clear, OP clear, MMM, normal dentition
- **Neck:** supple, no thyromegaly
- **Chest:** CTAB with no w/r/r, nml respiratory effort
- **Heart:** RRR, no m/r/g
- **Skin:** warm and clammy with mild diaphoresis
Differential Diagnosis

- Cardiovascular
  - PE
  - Dissection
  - Vasculitis
- Pulmonary
  - AVM
  - Spontaneous pneumothorax
  - Sarcoidosis
- Neoplasm
- Infection
  - TB
  - Fungi
  - Pneumonia
  - Pericarditis
  - Empyema
  - Lung abscess
- Environmental Pneumonitis
Labs

- **CBC**: WBC 13.4, Hg 15.7, HCT 43.5, Plts 142
  - Differential: 80% PMN’s, 11% lymphocytes, 9% monocytes

- **CMP**: Na 138, K 4.0, Cl 102, CO2 26, glucose 95, BUN 13, Cr 0.79, TP 7.4, albumin 4.7, AST 15, ALT 7, Alk Phos 70, T bili 4.4
Lung Abscess

• Typically a complication of aspiration pneumonia

• Incidence has decreased with antibiotic use

• Risk factors\(^1\&^3\):
  - Male Sex 82–83%
  - Oral surgery/tonsillectomy in seated position
  - Smoking 65–75%
  - Alcoholism 17–70%
  - Cancer (age >50) 8%
  - Periodontal disease 61–82%
  - LOC 79%
  - Bronchiectasis 3%

• 18.5% of patients had no underlying illness
Lung Abscess Diagnosis

• Symptoms are indolent
  – Fever, other VS normal
  – Productive cough +/- hemoptysis
  – Night sweats
  – Chest pain
  – Putrid sputum
  – Weight loss
  – Assess for risk factors

• Labs: CBC with leukocytosis & anemia

• CXR/CT scans

• Sputum Cultures
  – Usually + anaerobes and gram negatives
Lung Abscess Treatment

• First line treatment = Antibiotics
  – Clindamycin +/- Cephalosporin
  – Aminopenicillin/b–lactamase inhibitor
  – Metronidazole + Pencillin or Levaquin
• IV antibiotics until pt is afebrile & clinically improved then transition to PO
• Total treatment is usually 3–8 weeks
  – Follow Q2 week CXR
• Oral therapy = IV therapy in 1974 study
• Cure rates 85–95%
Lung Abscess Treatment
Failure & Prognosis

- Risks factors for medical failure
  - Recurrent aspiration
  - Large cavity >6 cm
  - Prolonged symptoms before treatment
  - Obstructing lesion
  - Thick-walled cavities
  - Serious co-morbidities
  - Empyema formation
  - Resistant organisms
  - Massive hemoptysis

- Prognosis
  - Pre-antibiotic era
    - 45% had surgery
    - 30% mortality
  - Antibiotic era
    - <15% have surgery
    - Overall mortality 10%
    - Primary/Community-acquired abscess mortality 2–5%
Case #2: DF Course

• Total outpatient treatment with Levaquin and Flagyl

• Improved after a few days on antibiotics
  – “B” symptoms resolved, appetite & cough improved
  – Feeling better and returned to work

• CT surgeon consulted 130 miles away over phone
  – Plan to re-CT scan after 3 weeks of antibiotic treatment
Case #2 Summary Points

• Lung abscess usually occurs in people at risk for aspiration pneumonia, but can occur in healthy people
• Periodontal disease is major risk factor
• Treatment is antibiotics
  – IV until symptomatic improvement then PO
  – Cover for anaerobes
• Good prognosis with primary and community-acquired abscesses
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