Photo Opportunity I: Photos and Questions to Test Your Board Preparation

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Disclosures of Financial Relationships with Relevant Commercial Interests

Scientific advisory boards:
- Merck (> 1 year ago)
- Gilead (> 2 years ago)

Cases are from an educational web-site: www.idimages.org

I acknowledge the contributors to the site for their case submissions and images.

Case 1

A woman in her forties presented with 6 days of fatigue, decreased appetite, fevers and chills. She also had severe headache and myalgias.

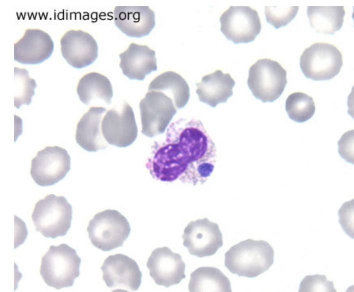
PMH: None.

SH: Patient was single and not sexually active. She denied cigarette, alcohol or illicit drug use. The patient had recently hiked in New Hampshire. She denied a history of tick bites. She had a dog but no other animal exposures.

Contributed by Anne Kasmar, M.D.

PE: She appeared well. T 103.5, BP 104/50, HR 122, RR 18, O_2 sat 97% on RA. She had no rash or adenopathy. Remainder of exam was normal.

Studies: WBC 2.3 (51% P, 29% bands, 14% L, 4% atypical lymphocytes); Hct 39%; Platelets 24. Serum chemistries values, including LFTs, were normal. Blood cultures were negative. CXR: normal



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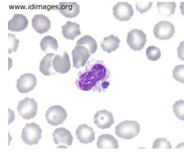
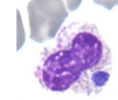
Differential Diagnosis

A. Meningococcemia
B. Anaplasmosis
C. Histoplasmosis
D. Babesiosis
E. "Spotless" Rocky Mountain Spotted Fever (RMSF)



Diagnosis and Follow-up

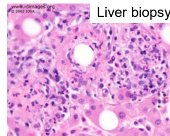
- Peripheral blood smear showed morulae inside white blood cells, consistent with anaplasmosis.



- Diagnosis confirmed with PCR testing.
- She was treated with doxycycline; symptoms completely resolved.

Case 2

- Man in his 20s presented with nine days of vomiting, diarrhea, fever, headaches.
- He lived on farm with goats, chickens, guinea pigs, turkeys, cats, dogs.
- He appeared acutely ill. T104.4° F. Exam otherwise normal.
- AST 111, ALT 79, Alk. Phos 146.


Liver biopsy

A. Coxiella
B. Cryptococcus
C. Histoplasma
D. Cyclospora
E. Bartonella

Contributed by Paul M. Jost, MD

Case 3

63 yo M with history of renal transplant developed multiple erythematous, raised, pruritic lesions on his thighs over the course of several weeks.

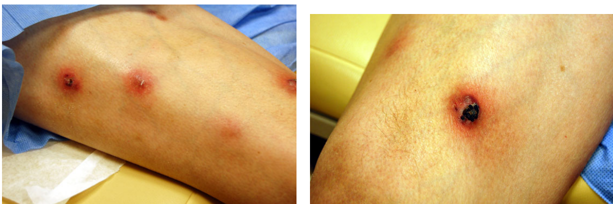
PMH: ESRD due to post-streptococcal glomerulonephritis, s/p cadaveric renal transplant in 1982; HCV infection.

Meds: prednisone 15 mg qd; azathioprine 150 mg qd

SH: Patient had a healthy cat at home. He lived in rural Maryland near farm animals and frequently saw deer in his yard. Avid gardener but recalled no recent puncture wounds. Several tick bites in the past year. Travel history: Mexico 2 yrs ago.

Contributed by Raj Gandhi, M.D.

PE: T: 36.8. Multiple erythematous nodules on both lower extremities. Lesions were tender and non-fluctuant, some with a central necrotic area. There was no discharge. The remainder of his exam was normal.



Studies:

WBC 3.3; Hematocrit 26%; Platelets 118,000; BUN 59 mg/dL, Creatinine 2.1 mg/dL; Bilirubin (total/direct) 2.1/1.3; AST 70; Alkaline Phosphatase 321.

CXR: normal

Blood Cultures: no growth

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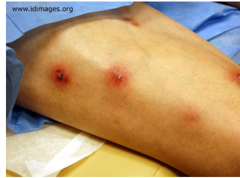
Differential Diagnosis

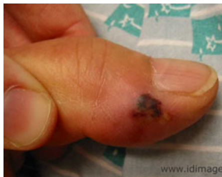
1. Cryoglobulinemic vasculitis related to HCV infection
2. Nocardiosis
3. Nontuberculous mycobacteria
4. Cutaneous aspergillus
5. Botryomycosis



Diagnosis and Follow-up

- Patient underwent skin biopsy of a lesion on his lower extremity.
- Microscopic examination: abscess containing many polymorphonuclear leukocytes, scattered multinucleated giant cells.
- Special stains revealed acid-fast bacilli.
- Culture grew *Mycobacterium chelonae*.

Case 4



- 72 yo M with bioprosthetic aortic valve presents with fever, dyspnea, anorexia.
- Lives in Boston; no recent travel.
- T: 101° Non-tender lesion on thumb.

A. Herpetic whitlow
B. Herpes zoster
C. Tache noir (Rickettsial infection)
D. Fusariosis
E. Endocarditis

Case 5

30 yo woman with HIV (CD4 cell count 20, not on therapy) presented with gradual onset of word-finding difficulties, expressive aphasia and right upper extremity weakness over 4 weeks.

She lived in New England. No recent travel or known insect bites. Not sexually active.

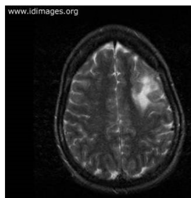
On exam, she was afebrile. She had oral thrush. She had difficulty naming objects and right-sided weakness.

Studies: WBC count of 2.2 (44% P, 45% L)

Contributed by Wendy Yeh, M.D.

Her clinical syndrome is most likely caused by:

A. An arbovirus
B. A polyomavirus
C. A herpes virus
D. A spirochete
E. A dematiaceous fungus



MRI: Abnormal T2 signal involving white matter, left fronto-parietal region. No enhancement, edema, mass effect

Progressive multifocal leukoencephalopathy

- CSF JC virus positive
- Demyelinating disease of central nervous system caused by reactivation of JC virus, a polyoma virus
- Immunocompromised hosts (heme malignancy; HIV, natalizumab, rituxamab)
- Rapidly progressive focal neurologic deficits, usually due to cerebral white matter disease.
- Rx: reversal of immunodeficiency. In people with HIV: antiretroviral therapy

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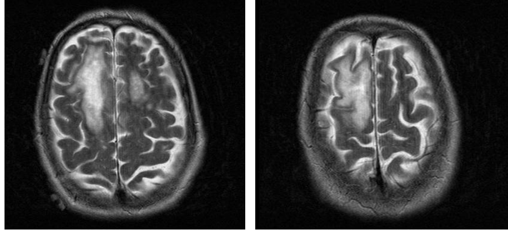
PML



Contributed by Vince Marconi, M.D.

Case 6

50 yo F developed ulcerated lesion on her left thumb which enlarged over several months despite several courses of antibiotics. She reported no sore throat, fever, chills, dyspnea or cough.

Three months before, she travelled to Ecuador, where she stayed in an ecotourism hotel near a river. No known fresh- or salt-water exposure.

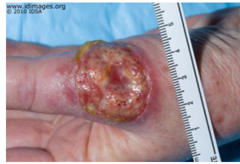
Reported seeing several kinds of insects and receiving several bites. No known animal exposures or tick bites.

Contributed by Rojelio Mejia, MD

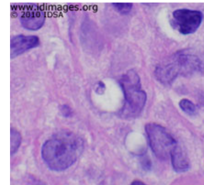
Differential Diagnosis

Patient appeared well. T 98.1.
Raised ulcerated lesion on thumb with a violaceous border

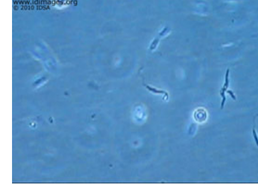
A. Cutaneous leishmaniasis
B. *Mycobacterium marinum*
C. Sporotrichosis
D. Pyoderma gangrenosum
E. Tularemia



Skin biopsy showed amastigote, with kinetoplast in a vacuole. Culture of tissue from skin biopsy in Schneider's Media revealed promastigotes. PCR of tissue: *Leishmania guyanensis*.

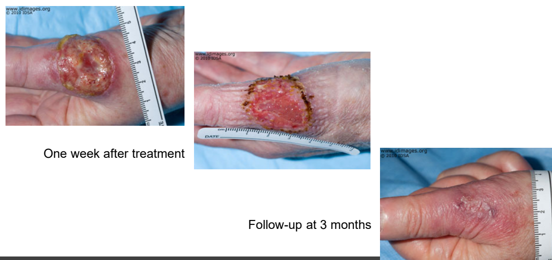


Skin biopsy, H and E stain



Culture of skin biopsy tissue in Schneider's medium

Treated with liposomal amphotericin

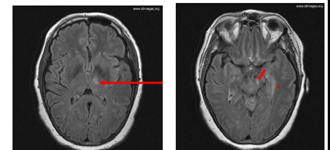


One week after treatment

Follow-up at 3 months

Case 7

- Woman in her 50s presented with fatigue, confusion, word-finding difficulties and fever for 3 days
- Lived in Midwestern US
- Avid outdoors person, frequently in wooded areas; husband recalls pulling a tick off her trunk recently
- T 101.3. Somnolent woman, oriented only to self
- CSF: WBC 146 (9% N, 56% L, 35% M); RBC 14; Glc 70; Pro 109



MRI: T2 hyperintensity left thalamus and substantia nigra; leptomeningeal enhancement

Contributed by Joy Chen, M.D. and Virk Abinash, M.D.

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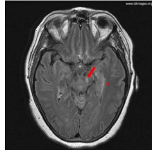
Differential Diagnosis

A. Neisseria meningitides meningitis
B. Herpes simplex virus encephalitis
C. Lyme meningoencephalitis
D. Powassan meningoencephalitis
E. Lymphocytic choriomeningitis



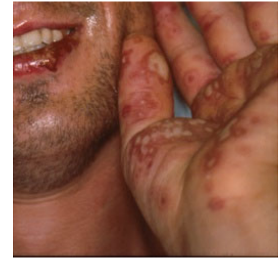
Case 8

HPI: 25 yo male with 2 days of fever and rash. Rash was predominantly on hands.

PMH: None. **Medications:** none

SH: Lived in New England. One female sexual partner. Denied travel or animal exposures.

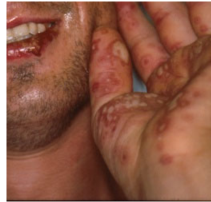
PE: Oral and hand lesions, as shown. Otherwise, normal exam.



Contributed by Johanna Daily, M.D.

Differential Diagnosis

A. Syphilis
B. Acute HIV-1 infection
C. RMSF
D. Erythema multiforme
E. Erythema migrans



Diagnostic Procedures/Results

- Culture of oral ulcer: HSV-1.
- Diagnosis: HSV-1-associated erythema multiforme.
- Detailed history revealed he had previous episode one year before, at which time he had first developed an oral ulcer.
- Treated with acyclovir, with complete resolution of his symptoms.
- Subsequently has had recurrent episodes

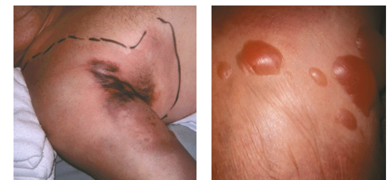
Case 9

- 60 yo M presented to ED with a few hours of severe pain in right upper extremity. There was no history of trauma. Exam was normal with no obvious skin changes. He was discharged home.
- Over the next few hours, he developed progressive swelling of right upper extremity.
- Exam: right upper extremity was diffusely swollen with a deep-red discoloration; several bullae.
- Studies: WBC 8,900 (47% polys, 38% bands). X-ray: air in soft tissues.

Contributed by Steve Calderwood, M.D.

Does this patient most likely have:

A. Vibrio vulnificus
B. Group A streptococcal necrotizing fasciitis
C. Mixed aerobic/anaerobic necrotizing fasciitis
D. Clostridial gas gangrene
E. Bullous pemphigoid



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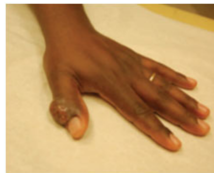
Case 10:
If you get this one . . . !

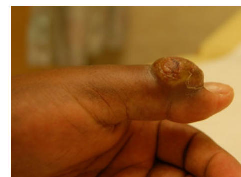
30 yo man of Ethiopian descent cut his left thumb with a knife while slaughtering a lamb as part of Easter festivities. He washed the wound with water and applied lemon juice and alcohol. One week later, he developed swelling and tenderness and a fluctuant lesion at the site.

Two weeks after the injury, he underwent incision and drainage; cultures grew *Staph. aureus* (oxacillin sensitive). Treated with cephalexin but did not improve.

Contributors: Drs. Isaac Bogoch, Rajesh Gandhi

Afebrile. 2 x 2 x 2 cm firm lesion on his thumb, without discoloration, purulent discharge, fluctuance, or bleeding.

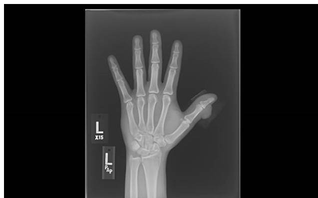




Creatinine and LFTs normal. Glucose 158.

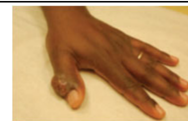
WBC 4.2 (normal differential).

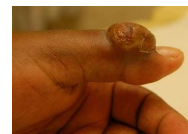
X-ray: fungating soft tissue lesion on dorsal aspect of distal thumb; no underlying bone or joint abnormality



Question

A. Botryomycosis due to *S. aureus*
B. Nocardia
C. Brucella
D. Orf
E. Salmonella

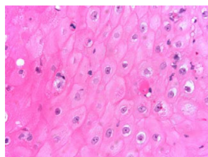




Contributors: Dr. Isaac Bogoch, Rajesh Gandhi

Follow-up

- Lesion removed surgically.
- Pathology: hyperkeratosis, epidermal necrosis, dermal infiltrate of mixed inflammatory cells; surface keritonocytes with eosinophilic inclusions
- PCR testing at CDC + for orf virus DNA



Appearance consistent with ecythma contagiousum

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