Disseminated Varicella-Zoster Infection and Complications in a Post-Pubertal Unvaccinated Patient

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A previously healthy 16 year old Hispanic male presents with a rash. His symptoms initially started four days prior to admission, with sharp back pain radiating up and down his spine. Two days later, he noticed “bumps” on his face and left arm with worsening of his back pain. One day prior to admission, he came to our ER with inability to tolerate his back pain. X-rays of his back were normal and he was sent home with medication for musculoskeletal pain. However, he returned less than 24 hours later with rapid, diffuse progression of his rash, inability to tolerate po, and even worsening back pain. Unable to keep eyes open or speak without pain. Denies similar symptoms in contacts. No recent travel.

Hospital Course

• Admission for pain, po management, workup of rash
• Suspected primary VZV infection
• Supportive care
  - Required Dilaudid PCA for pain control
  - IVF as unable to tolerate po
• Pediatric Infectious Disease consultation
  - Started on IV Acyclovir due to severity of rash
  - Noted higher risk of severe disease, complications in post-pubertal patients
  - Placed in airborne and contact isolation
  - Researched Mexican immunization schedule: varicella not required!
  - PCR, DFA and Viral culture of lesions: VZV+
• Pediatric Ophthalmology consultation
  - Painful, blurry vision: HSV keratitis
  - Ganciclovir ophthalnic drops
• Pediatric Neurology consultation
  - Waxing and waning mental status, unstable gait, several falls, continued back pain
  - Concern for HSV cerebral vasculitis and spinal neuropathy
  - MRI brain not obtained due to isolation, instead closely monitored
• Day of discharge
  - All lesions crusted, no new lesions
  - Markedly decreased swelling, pain
  - Return to mental baseline
  - Repeat labwork prior to discharge
  - Creatinine 0.9(admission) → 1.6
• Pediatric Nephrology consultation
  - Acyclovir-associated crystalline-induced nephrotoxicity
  - Switched to po Acyclovir and aggressive IV hydration
  - Renal function returned to baseline
• Family exposures
  - Several unvaccinated, susceptible family members ranging from children to adults
  - Post exposure prophylaxis, vaccinations given
• Follow-up care
  - Residual scarring - recommended sunscreens to minimize scratching, topical emollients
  - Close follow up with PCP to ensure no further complications

Discussion

• Varicella-Zoster Virus: double stranded, linear DNA virus
  - Highly contagious, infective period is 48 hrs prior to onset of rash to 4 days after crusting of all lesions
• Primary VZV - routine childhood infection
  - Post-pubertal disease course is more severe for unknown reasons
• Uncomplicated varicella: develops within 15 days of exposure
  - Prodrome of fever, malaise
  - Rash within next 24 hrs, varying stages of each lesion
  - Progression through resolution
  - Residual scarring
• Complications: superimposed secondary skin infection, pneumonia/pneumonitis, encephalitis, Reye syndrome, necrotizing fasciitis, hepatitis, keratitis, stroke
• Clinical diagnosis, no labwork necessary
  - Can use PCR/DFA/Viral Cs/Serologic testing to confirm if questionable
• Supportive care is mainstay of treatment
  - If at risk for severe/complicated disease can initiate Acyclovir
• Airborne and contact isolation
  - Pregnant women/immunocompromised/neonates/elderly should avoid contact
• Post-exposure prophylaxis if post-pubertal; immunize if pre-pubertal
• Live attenuated vaccine: first dose 12-15 mo, second dose 4-6 yrs
  - Need 2 doses by 13 yrs; minimum interval <12 yrs is 3 months, >13 yrs is 4 weeks
  - If no evidence of immunity by age 13, routine vaccination with two doses of vaccine 4-6 wks apart
• Contraindications: immunosuppression or immunodeficiency, untreated Tb, pregnancy, current febrile illness
  - Can vaccinate HIV+ children/8 yrs if CD4>200

Take-Home Points

• Varicella-Zoster infection is more severe, complicated post-puberty
• Clinical diagnosis is key
• Highly contagious, strict isolation precautions
• Treatment, post exposure prophylaxis, vaccination if necessary
• Infectious until all lesions have progressed to crusting
• US vaccination guidelines are not universal

References