



Boonshoft
School of Medicine
WRIGHT STATE UNIVERSITY

INFECTIOUS DISEASES NEWSLETTER

August 2013

[T. Herchline, Editor](#)

LOCAL NEWS

ID Fellows

Dr Kunal Desai will be at the VA Medical Center in August through September and at Miami Valley Hospital October through December. Dr. Katelyn Booher will be at Miami Valley Hospital August through September and at the VA Medical Center October through December.

Our newest fellow, Dr Katelyn Booher, is married with two children ages 2 and 1. She is a graduate of Ohio University with a Bachelor of Science in Microbiology as well as her Doctor of Osteopathy.

Local Disease Activity

There have been 2 reported cases of Lyme disease in Montgomery County residents during the month of July. One was an 11 year old female who was visiting relatives in Arkansas prior to onset of symptoms. Family reported that she was bitten by a brown tick on her shoulder while in Arkansas. The other was a 59 year old male that spent 2 weeks in Exeter Rhode Island logging. He stated that he spent 8 to 10 hours a day in the woods and removed multiple deer ticks while working. Both have been treated with antibiotics.

Montgomery County continues to see increased numbers in cases of pertussis being reported. During the month of July (through 7/29), 36 cases of pertussis were reported. This brings the total since the beginning of May to 55; 35 were male and 20 were female. Ages ranged from 2 months to 26 years. Of the cases reported with a positive polymerase chain reaction (PCR) since the beginning May, 31 have fulfilled the clinical criteria: cough illness lasting ≥ 2 weeks and either paroxysms of coughing, inspiratory "whoop," or posttussive vomiting. Cases have been widely distributed throughout the Miami Valley with only an occasional family cluster. The majority of these cases were fully vaccinated. All of the cases, household members and those identified as close contacts to the cases received antimicrobials.

Nineteen cases of Legionnaires' disease were reported in Montgomery County residents through the month of July. Ages range from 41 years to 83 years. All were hospitalized but have been discharged and are recovering at home. No common source of infection has been identified. These cases are considered sporadic, and none were nosocomial. For comparison, the annual totals for Montgomery County during the previous 10 years has averaged 10.5 with a range of 4 to 25. Increase numbers are being reported at the state and national level. A retirement community near Columbus has been associated 39 cases including 8 visitors and one employee; there have been 6 deaths associated with the outbreak.

NATIONAL NEWS

Contributed by Kunal Desai, MBBS

Outbreak of Cyclosporiasis in the United States

As of August 6, 2013 (5pm EDT), CDC has been notified of 467 cases of *Cyclospora* infection from the following 16 states: Arkansas, Connecticut, Florida, Georgia, Iowa, Illinois, Kansas, Louisiana, Minnesota, Missouri, Nebraska, New Jersey, New York (including New York City), Ohio, Texas, and Wisconsin. Cases in this outbreak are defined as laboratory-confirmed *Cyclospora* infection in a person with onset of illness since June 2013 and no history of travel outside of the United States or Canada during the 14 days prior to onset of illness. Most of the illness onset dates have ranged from mid-June through early July. To date, CDC has confirmed 41 cases of *Cyclospora* infection in CDC laboratories. CDC's independent analyses of data from the epidemiologic investigations in Iowa and Nebraska confirmed an association between consuming salad and being ill with cyclosporiasis during June and July 2013 in those two states. This salad was determined to be a pre-packaged salad mix. The traceback investigation conducted by FDA identified Taylor Farms de Mexico, S. de R.L. de C.V., a processor of foodservice salads, as the source of the pre-packaged salad mix identified in the cyclosporiasis outbreak in Iowa and Nebraska.

Updated Recommendations for Use of Varicella-Zoster immunoglobulin (VariZIG)

In December 2012, the Food and Drug Administration (FDA) approved VariZIG, a varicella zoster immune globulin preparation for use in the United States for postexposure prophylaxis of varicella for persons at high risk for severe disease who lack evidence of immunity to varicella and for whom varicella vaccine is contraindicated. VariZIG, a purified immune globulin preparation made from human plasma containing high levels of anti-varicella-zoster virus antibodies (immunoglobulin G), is the only varicella zoster immune globulin preparation currently available in the United States. VariZIG is now approved for administration as soon as possible following varicella-zoster virus exposure, ideally within 96 hours (4 days) for greatest effectiveness. CDC recommends administration of VariZIG as soon as possible after exposure to the varicella-zoster virus and within 10 days. CDC also has revised the patient groups recommended by the Advisory Committee on Immunization Practices (ACIP) to receive VariZIG by extending the period of eligibility for previously recommended premature infants from exposures to varicella-zoster virus during the neonatal period to exposures that occur during the entire period for which they require hospital care for their prematurity. The CDC recommendations for VariZIG use are now harmonized with the American Academy of Pediatrics (AAP) recommendations.

Isavuconazole Granted Orphan Drug Designation by US FDA

BasileaPharmaceutica Ltd reported that the US Food and Drug Administration (FDA) have granted orphan drug designation to isavuconazole for the treatment of invasive aspergillosis. An FDA orphan drug designation provides several benefits to the sponsor including 7-year market exclusivity from product approval in the United States. Isavuconazole (drug substance: isavuconazonium sulfate) is an investigational intravenous and oral broad-spectrum antifungal. Isavuconazole is being investigated in phase 3 clinical studies for the treatment of severe invasive fungal infections. The drug demonstrated in vitro and in vivo coverage of a broad range of yeasts (such as *Candida* species) and molds (such as *Aspergillus* species) as well as in vitro activity against less prevalent but often fatal molds including those that cause mucormycosis. In clinical studies to date, isavuconazole achieved predictable drug levels; this result supports reliable dosing and a switch from intravenous administration to a once daily oral dose. Top-line data from 2 isavuconazole phase 3 studies are expected in the second half of 2013. These include the SECURE phase 3 registration study, evaluating the safety and efficacy of once-daily isavuconazole

versus twice-daily voriconazole for the primary treatment of invasive fungal disease caused by *Aspergillus* species and from the open label VITAL study investigating isavuconazole for the treatment of patients with invasive life-threatening fungal disease caused by emerging fungi and the treatment of aspergillosis patients with preexisting renal impairment.

Universal Decolonization Superior to Screening and Isolation

Washing every patient in intensive care units (ICUs) daily with chlorhexidine-impregnated cloths reduced positive cultures of methicillin-resistant *Staphylococcus aureus* (MRSA) by 37% and reduced bloodstream infection by any pathogen by 44%, according to a study published in the *New England Journal of Medicine*. Researchers compared the effect of 3 methods of infection control in 43 Hospital Corporation of America hospitals. The study included 74 adult ICUs and 74,256 patients. The researchers randomly assigned participating hospitals to 1 of 3 actions: screening for MRSA followed by isolation of those testing positive, targeted decolonization of MRSA-positive patients and isolation, and universal decolonization of all ICU patients without screening. Patients were decolonized via daily cleansing with chlorhexidine-impregnated cloths and 5 days of twice-daily intranasal mupirocin treatments. There was no significant difference in the rate of MRSA infections among the 3 groups in the baseline period. However, pairwise comparisons showed that universal decolonization led to a significantly larger decline between baseline and intervention periods than either of the targeted interventions. Specifically, universal decolonization led to a 37% drop in the rate of MRSA infections, and screening and isolation showed no significant change. Universal decolonization also resulted in significantly fewer ICU-attributed bloodstream infections from any pathogen, with a drop of 44% from baseline compared with screening and isolation.

INTERNATIONAL NEWS

Middle East respiratory syndrome coronavirus (MERS-CoV) update

The World Health Organization reported the first cases of pneumonia caused by the novel Middle East respiratory syndrome coronavirus (MERS-CoV) in September, 2012. Hospital outbreak of MERS-CoV was reported in details in a paper published in *New England Journal of Medicine* (**N Engl J Med 2013;369:407-16**). Between April 1 and May 23, 2013, a total of 23 cases of MERS-CoV infection were reported in the eastern province of Saudi Arabia. A total of 21 of the 23 cases were acquired by person-to-person transmission in hemodialysis units, intensive care units, or in-patient units in three different health care facilities. Sequencing data from four isolates revealed a single monophyletic clade. As of June 12, a total of 15 patients (65%) had died, 6 (26%) had recovered, and 2 (9%) remained hospitalized.

On June 11, 2013, CDC issued interim infection prevention and control recommendations for hospitalized patients with known or suspected MERS-CoV infection in U.S. hospitals. To date, no MERS-CoV cases have been reported in the United States; however, cases have been reported in eight other countries. Recent published reports have described limited health-care transmission of MERS-CoV, including cases among health-care personnel in international settings. In coming months, the U.S. health-care system might be called upon to provide care to patients infected with MERS-CoV.

Case Conference

Contributed by Katelyn Booher, DO

A 40-year-old Caucasian male was admitted July 2013 with a pathologic fracture of his left humerus. Recently, he had been undergoing work-up for mediastinal lymphadenopathy and fever of three months duration. He was evaluated in the outpatient setting repeatedly, and treated for pneumonia with multiple antibiotics, including levofloxacin, and also repeated courses of prednisone. During this time, he suffered a left triceps tendon tear that was attributed to levofloxacin. The patient was referred to infectious diseases specialist due to concern for histoplasmosis. At that time, ESR and CRP were elevated at 120 and 300, respectively. Mediastinoscopy with biopsy and cultures, including for acid fast bacilli and fungi, was unremarkable. Upon admission in July, MRI left upper extremity demonstrated a large destructive mass with a large soft tissue component, concerning for sarcoma or metastatic disease. Histoplasma antigen, cryptococcal antigen, blastomycosis antigen, aspergillus antigen, T-spot, and blood cultures were all unremarkable. The patient was immune to CMV and EBV. Upon surgical exploration of the left upper extremity abnormality, purulent material consistent with abscess was seen. Cultures taken from the surgical site grew microaerophilic Streptococcus. The biopsy was consistent with acute and chronic osteomyelitis; no atypia or malignancy was found. Ceftriaxone for six-week duration was instituted, and subsequently an antibiotic spacer was placed. The ultimate plan is to use the patient's fibula to reconstruct the left humerus.

Discussion

Chronic osteomyelitis secondary to microaerophilic Streptococcus is an extremely rare entity. The mechanism of infection in this particular case remains unclear, but microaerophilic Streptococcus is well known to reside in the oral cavity, and also the gastrointestinal tract. Therefore, upper and lower endoscopies, and a dental evaluation were advised. In this patient, a PET scan was completed one month prior to admission, but the upper extremities were not imaged.

Microaerophilic Streptococcus, previously *S. milleri*, include the *S. anginosus*, *S. intermedius*, and *S. constellatus* group. These organisms are invasive, and cause bacteremia, endocarditis, meningitis, and abscess formation, especially of the head and neck. The largest case series on the subject was published in March 2013. Eleven patients with the condition were reviewed in terms of demographics, co-morbidities, presentation, and outcomes. Overall, these organisms were noted to be significantly virulent, associated with abscesses in 75 percent of cases, requiring prolonged treatment of at least 10 weeks, and extensive debridement with an average of three or more surgeries per patient.

It is unclear whether the patient ruptured his triceps tendon secondary to the abscess, or the tendon tear resulted in an infectious nidus. Levofloxacin is known to be a cause of Achilles tendonitis and rupture (though rupture is more often in females), and is a possible cause for the patient's tendon rupture. Levofloxacin is also more toxic to tendons than some other fluoroquinolones, such as ciprofloxacin, because it contains a particular methyl piperadiny substituent at the R-7 position. I was unable to locate any literature describing triceps tendon tears causing subsequent skin and soft tissue infections.

Though a PET scan was completed, the upper extremities were not imaged, presumably because the clinical focus was the mediastinal area. However, the utility of PET scans for fever of unknown origin is good, with an accuracy of greater than 85% in this setting. Guidelines from the EANM (European Association of Nuclear Medicine) and SNMMI (Society of Nuclear Medicine and Medical Imaging) have demonstrated greater than 90% accuracy for entities such as osteomyelitis, sarcoidosis, and spondylodiskitis as well.

References:

1. Wise, L. Barton, M.D., et al. Impact of Age, Sex, Obesity, and Steroid Use on Quinolone-associated Tendon Disorders. *The American Journal of Medicine*. 2012 Elsevier Inc. 125, 1228.e23-1228.e28.
2. Griffin, Thomas, et al. Streptococcus anginosus group and osteomyelitis: a single centre clinical experience. *Postgrad Med J*. March 2013. 89: 262-265.
3. Jamar, Francois, Buscombe, John, et al. EANM/SNMMI Guideline for 18F-FDG Use in Inflammation and Infection. January 2013. *Society of Nuclear Medicine and Molecular Imaging, Inc.* Vol. 54, No. 4, pp. 647-658.

BUG OF THE QUARTER

Contributed by W. Grant Starrett, M.D.

This article reviews the more obscure organisms which are less commonly isolated in clinical specimens. Please contact me at wgstarrett@premierhealth.com if you come across an isolate that may fit in this category.

For this edition of “Bug of the Quarter” we will be testing your knowledge of those organisms reviewed over the last two years. Please match the description with the correct organism. Answers may be found at the end of the newsletter – if needed! See previous editions of the newsletter for a brief explanation.

Matching

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| I. <i>Myroides odoratus</i> | A. stool anaerobe renamed to the species <i>Eggerthella</i> |
| II. <i>Prototheca wickerhamii</i> | B. an oxidase-negative pseudomonad of low virulence |
| III. <i>Eubacterium lentum</i> | C. rapidly growing dematiaceous fungus |
| IV. <i>Epicoccum</i> | D. GNB found in soil/water, resistant to all <i>B</i> -lactams |
| V. <i>Corynebacterium argentoratense</i> | E. generally does not grow at core body temperature |
| VI. <i>Flavimonas oryzihabitans</i> | F. non-pigmented fungal cause of leaf blight and fruit rot |
| VII. <i>Phomopsis</i> | G. ubiquitous algae |
| VIII. <i>Candida zeylanoides</i> | H. rapid glucose fermenter that may cause tonsillitis |

Upcoming Events

August 2013		
2-3	Musculoskeletal Infection Society	Philadelphia, PA
14	Journal Club	MVH 6NW
28	Case Conference	MVH Maxon Parlor
September 2013		
10-13	ICAAC	Denver, CO
11	Journal Club	MVH 6NW
25	Case Conference	MVH Maxon Parlor
October 2013		
2-6	IDSA/ID Week	San Francisco, CA
9	Journal Club	MVH 6NW
30	Case Conference	MVH Maxon Parlor
November 2013		
13	Journal Club	MVH 6NW
13-17	American Society of Tropical Medicine & Hygiene	Washington DC
27	Case Conference	MVH Maxon Parlor
December 2013		
11	Journal Club	MVH 6NW
	Case Conference (Cancelled)	
January 2014		
8	Journal Club	MVH 6NW
29	Case Conference	MVH Maxon Parlor

Bug of the Quarter: Answers

Organism	Answer	Newsletter Ed.
<i>Myroides odoratus</i>	(D) GNB found in soil/water, resistant to all <i>B</i> -lactams	2/12
<i>Prototheca wickerhamii</i>	(G) ubiquitous algae	2/13
<i>Eubacterium lentum</i>	(A) stool anaerobe renamed to the species <i>Eggerthella</i>	11/11
<i>Epicoccum</i>	(C) rapidly growing dematiaceous fungus	5/13
<i>Corynebacterium argentoratense</i>	(H) rapid glucose fermenter that may cause tonsillitis	5/12
<i>Flavimonas oryzihabitans</i>	(B) an oxidase-negative pseudomonad of low virulence	8/11
<i>Phomopsis</i>	(F) non-pigmented fungal cause of leaf blight and fruit rot	8/12
<i>Candida zeylanoides</i>	(E) generally does not grow at core body temperature	11/12