

442. Risk Score for Vancomycin-Associated Acute Kidney Injury in Hospitalized Patients with Acute Bacterial Skin and Skin Structure Infections

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Background. Vancomycin (VAN) has been the standard empiric antibiotic for the treatment of hospitalized patients with acute bacterial skin and skin structure infections (ABSSSI) for decades but its use can be complicated by acute kidney injury (AKI). The substantial morbidity and mortality associated with AKI underscores the need to identify ABSSSI patients at increased risk for this complication. The objective of this study was to derive a clinical prediction model for VAN-associated AKI (VAN-AKI) in hospitalized patients with ABSSSI and at least one baseline traditional risk factor for AKI.

Methods. This was a multicenter, retrospective, case-control study between 2015 and 2018 conducted at seven academic medical centers in the USA. The population of interest was hospitalized adults with ABSSSI treated with VAN ≥ 72 h and initiated ≤ 24 h of admission. Cases consisted of patients who developed AKI according to the RIFLE criteria during VAN or ≤ 72 h of discontinuation. Patients who did not develop AKI served as controls. Independent predictors of VAN-AKI were identified through multivariable logistic regression. A risk score was derived using a weighted coefficient-based scoring system.

Results. A total of 284 patients (28 cases and 256 controls) were included. Independent predictors of VAN-AKI included in the score were: metastatic cancer, ICU admission at VAN initiation, alcohol abuse, ≥ 2 nephrotoxins, mental health disease, lower extremity ABSSSI and prior ABSSSI within 1 year. Patients with mental health disease had a variety of advanced chronic comorbidities and substance use. The median risk score in cases and controls was 9 (7, 11) and 4 (3, 7) ($P < 0.001$), respectively. The risk score area under the receiver operator curve was 0.803 (95% CI 0.712, 0.894). The sensitivity, specificity, positive predictive value and negative predictive value of the risk score using a threshold of 5 points was 89.29% (95% CI 70.63%, 97.19%), 51.56% (42.27%, 57.81%), 16.78% (11.35%, 23.97%) and 97.78% (93.14%, 99.42%), respectively.

Conclusion. The risk score developed in this study provides a standardized, evidenced-based approach to identify hospitalized patients with ABSSSI at higher risk for VAN-AKI. External validation is required before widespread use.

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443. The CHROME Study, a Real-World Experiential Registry of the Use of Oritavancin for Treatment of Gram-Positive Infections

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Background. Oritavancin (ORI) is a long-acting lipoglycopeptide antibiotic indicated for the treatment of adult patients with acute bacterial skin and skin structure infections (ABSSSI) caused or suspected to be caused by susceptible Gram-positive (GP) pathogens.

Methods. Data collected from a retrospective observational registry program (2014–2017), Clinical and Historic Registry and Orbactiv Medical Evaluation (CHROME), describe the utilization, outcomes, and adverse events (AEs) associated with ORI in 440 patients treated at 26 US sites.

Results. Mean (SD) age was 58 (16) years; 37% of patients were ≥ 65 years old (range, 18–98). Mean (SD) BMI was 32.8 (9.0) (range, 14–65). At least 1 co-morbidity was observed in 85% of patients. Patients were treated for cellulitis (61%), wound infection (15%) or abscess (15%); 32 patients received ORI to treat other infections, such as bone and joint. Ten patients received single-dose ORI for completion of osteomyelitis therapy. Of recovered GP isolates, MRSA was the most common (46%). Infusion of ORI was mostly in infusion center settings (72%). Clinical success was 88% in the single-dose group (387 patients) and 86% in the multi-dose group (51 patients). A cohort

of 32 patients received 2 to 10 ORI doses separated by no more than 14 days for complicated GP infections. Clinical success was observed in 30 of 32 patients (94%), including 10 of 11 (91%) patients with bone and joint infections and 7 of 8 (88%) patients with osteomyelitis. AEs were observed for 29 of 440 (6.6%) of patients; there was a single serious AE. Six (1.4%) patients discontinued ORI infusions due to an AE.

Conclusion. The CHROME program confirms that ORI is an effective and well-tolerated long-acting lipoglycopeptide antibiotic for the treatment of a range of Gram-positive infections.

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444. Better Efficiency, Same Accuracy: Point-of-Care PCR for the Detection of Group A streptococcus in Noninvasive Skin Infections

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Background. Group A streptococcus (GAS) is a common cause of skin and soft-tissue infections (SSTIs). Current diagnostic techniques are culture-based and time intensive, requiring the prescription of empiric antibiotics before results are available. New detection tools are needed to hasten the diagnosis and appropriate treatment of SSTIs. The Cobas[®] Liat[®] System is a point of care (POC), real-time PCR system developed by Roche Molecular Diagnostics and is used in the United States and Europe to detect GAS from throat swabs within 15 minutes. We evaluated the feasibility and performance characteristics of POC for the detection of GAS in non-severe SSTIs.

Methods. Wound swabs collected from patients presenting to the White River Indian Health Service Hospital with non-severe SSTIs requiring only outpatient treatment were eligible for inclusion. Two swabs were collected: one swab was cultured on sheep's blood agar, and the other swab was tested using POC. Compared with culture, we determined the sensitivity (SN), specificity (SP), positive predictive value (PPV), and negative predictive value (NPV) for POC to detect GAS in wound samples. We performed chart reviews 30-days from eligibility to assess the potential impact of POC systems on antibiotic use and healthcare utilization for SSTIs.

Results. To date, we have tested 100 (25%) of our target 400 samples (enrollment will be complete in August 2019). Of the 100 samples, 50 (50%) tested positive for GAS by POC, all of which were culture positive for GAS, 49 tested negative by POC (2 after a first invalid result), all of which tested culture negative for GAS (table), and 1 had an invalid POC result even after repeat testing (culture positive for MRSA only) and was excluded from further analysis. Among samples with a valid POC result, POC SN was 100%, SP was 100%, PPV was 100%, and NPV was 100%. The most common mono-infections were MRSA (22%), GAS (18%), and CoNS (6%). Among GAS cases, MSSA (32%) and MRSA (18%) co-infection was common.

Conclusion. POC PCR is highly sensitive and specific for the detection of GAS in non-severe SSTIs. To our knowledge, this is the first prospective study to use this technology for wound samples. POC PCR methods have the potential to accelerate identification of SSTI pathogens and improve antibiotic prescribing.

Table 1: Performance of POC PCR versus traditional culture			
		Culture Result for GAS	
		(+)	(-)
POC Result for GAS	(+)	50	0
	(-)	0	49

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445. A Case of Disseminated Microsporidia Manifesting as Skin Lesions in a Patient with Acute Lymphoblastic Leukemia

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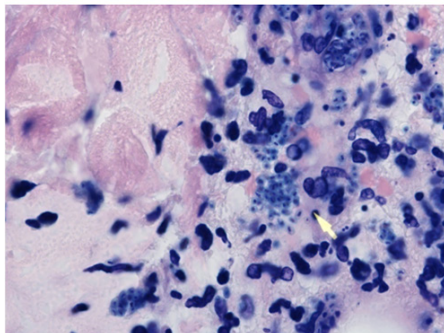
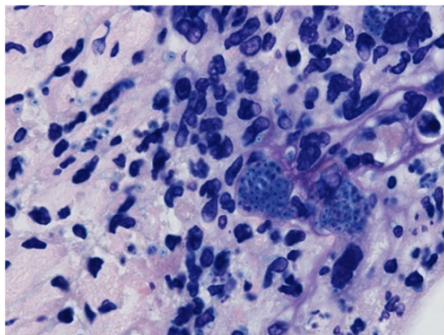
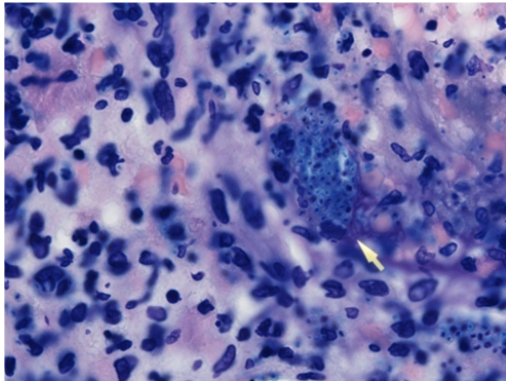
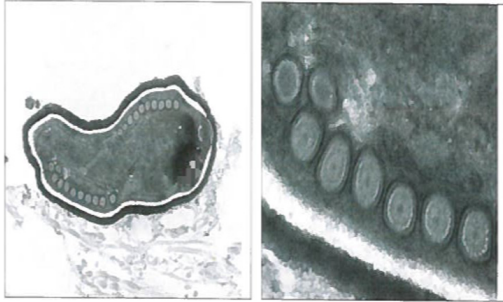
Background. We present a case of a 65-year-old male with a history of acute B-cell lymphoblastic leukemia (ALL) who presented with fevers and skin lesions. The patient achieved remission after induction chemotherapy. Nineteen months after diagnosis, while on maintenance therapy, the patient presented as noted above. He was instructed to hold maintenance therapy and sent to the hospital.

Methods.

Results. On examination, the patient was febrile. He had papules present on the forehead, chest, arms, legs, and back. Physical examination was otherwise unremarkable. Labs were notable for a white blood cell count of 3600/uL (absolute neutrophil 3100/uL) and creatine kinase (CK) of 593 U/L. Blood and urine cultures, Histoplasma, Varicella, Toxoplasma, HIV, and an acute hepatitis panel were negative. CT of the chest, abdomen, and pelvis was unremarkable. He was empirically started on micafungin

and valacyclovir. However, he continued to have fevers and myalgias. Wound culture was negative for fungus after four weeks of growth. Skin biopsy immunostains were consistent with an unknown protozoan. Specimens were sent to an outside facility and yielded a diagnosis of *Anncaliia algerae*. Antibiotics were changed to albendazole and voriconazole, with subsequent improvement in all symptoms.

Conclusion. Microsporidia most commonly infect immunocompromised hosts. Clinical manifestations of microsporidiosis are extremely diverse. Oftentimes, symptoms are not present in those found to be infected with Microsporidia. A disseminated disease has been identified but remains rare. Although Microsporidia have been identified as a cause of infection in immunocompromised patients, there are few reports of infection in those diagnosed with cancer, and only a few cases have been due to *Anncaliia algerae*. In studies pertaining to ALL patients, roughly one-fifth of patients were identified as being infected with Microsporidia, but most did not have symptoms. This is the first reported case of disseminated Microsporidia in a patient with ALL and the first disseminated infection presenting as a skin manifestation. Of identified cases of disseminated Microsporidial infection, mortality was high. Thus, prompt recognition of Microsporidia as a cause of infection in patients with ALL is of utmost importance.



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446. Epidemiology of Necrotizing Fasciitis in Korea: A Nationwide Study Using Claims Data

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Background. Necrotizing fasciitis (NF) is a rare but fatal infectious disease that causes economic burdens on patient and the healthcare system. We investigated the incidence of necrotizing fasciitis (NF) and the seasonal variation of necrotizing fasciitis in Korea.

Methods. We analyzed a nationwide claims database from the Korean Health Insurance Review and Assessment Service from 2011 to 2017. For case definition, we used two different methods. First, patients who hospitalized with NF diagnosis code and received surgical intervention (NF code method) were defined as NF. Second, patients hospitalized with sepsis codes accompanying surgical intervention codes were defined as NF (sepsis code method). The annual incidence rate per 100,000 population of NF was calculated using the number of identified NF cases as numerator and age- and sex-specific midyear population as the denominator. Poisson regression models were used to assess the relationship of crude incidence rates to year, age, and sex. A multivariate Poisson regression model was used to investigate variations in trends in the monthly NF cases.

Results. The overall average annual incidence rate of NF during 2012–2017 was 0.86/100,000 by NF code method and 1.47/100,000 by the sepsis code method. The incidence of NF increased with age and 2.5 times higher in males than females across all age groups. Two-thirds of episodes occurred in diabetes patients. The incidence of NF occurred the most during summer. A multivariate Poisson regression model using national meteorological variables suggested that higher mean temperature of and larger numbers of NF cases during a prior month increased NF cases.

Conclusion. The possibility of NF should be suspected for the cases for an elderly man with diabetes in summer. From a national management perspective, the prior information on the number of NF incidences and the mean temperature can help predict NF outbreak.

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447. Disease Progression in Patients with Acute Bacterial Skin and Skin Structure Infections: A Comparative Analysis Between Oritavancin and Vancomycin

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Background. Without the appropriate treatment, acute bacterial skin and skin structure infections (ABSSSI) have the potential to progress to more serious infections such as bacteremia and osteomyelitis. Utilizing single-dose oritavancin rather than vancomycin with step-down oral antibiotics, the need for compliance with outpatient antibiotics is eliminated. The objective of this study was to determine whether oritavancin use may reduce the sequelae from ABSSSI treatment failures, prevent skin infection recurrences, and subsequently improve patient outcomes.

Methods. Patients administered oritavancin or vancomycin for treatment of ABSSSI between May 2017 and March 2019 were included in this retrospective evaluation. The primary endpoint was to determine the 30-day ABSSSI progression rate to bacteremia, osteomyelitis, or endocarditis between treatment arms based on hospital readmissions. Study investigators determined that the source of each resultant infection was from the initial ABSSSI based on the presence of their prior skin infection and cultures, as well as history of present illness and reported patient compliance. In cases of osteomyelitis, infection location was also considered. The secondary endpoint was to determine the ABSSSI readmission rates between treatment arms. Data were analyzed by fisher's exact test, chi-square test or t-test as appropriate.

Results. A total of 99 patients receiving oritavancin and 100 patients receiving vancomycin with prescribed step-down oral antibiotics were identified as meeting inclusion criteria. Eighteen of 100 patients (18%) returned for recurrent ABSSSI infection in the vancomycin arm while 7 of 99 (7.1%) returned in the oritavancin arm ($P = 0.0309$). Of the 7 returning oritavancin patients, 1 (14.3%) had bacteremia as a result of persistent ABSSSI compared with 7 of 18 (38.9%) patients who previously received vancomycin returned with bacteremia, including 1 case of osteomyelitis ($P = 0.0649$).

Conclusion. Utilizing oritavancin for treatment of ABSSSI in this population resulted in improved patient outcomes, significantly fewer hospital readmissions for ABSSSI, and decreased infection sequelae from inadequately treated skin infections.

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448. Impact of Doxycycline Prophylaxis on Skin and Soft-Tissue Infection Incidence in Naval Special Warfare Trainees

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