2099. Inducible Clindamycin Resistance Is More Common in Lancefield groups C and G Streptococci Compared with group A in Clinical Specimens: A Single-center Experience, 2013 to 2016

Arick Sahn, DO, MPH1 and Glen Hansen, PhD2; Infectious Diseases and International Medicine, University of Minnesota, Minneapolis, Minnesota, 1Microbiology, Henry Ford Health System, Detroit, Michigan, 2Medical Microbiology, Henry Ford Health System, Detroit, Michigan

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Background. Current susceptibility testing recommendations for β-hemolytic streptococci outline testing for clindamycin resistance, including inducible resistance by a positive D-zone phenotype. However, few studies describe the prevalence of clindamycin resistance among invasive GCS and GGS organisms. This study aims to describe the prevalence of clindamycin resistance among GCS/GGS compared with invasive Group A streptococci (GAS) during the same period in a large United States health system.

Methods. Streptococci isolated from blood, tissue, and body fluids (n = 298) recorded from January 1, 2013 to May 1, 2017 were audited using SafetySurveillance software. Members of the anginosus-group streptococci were excluded. Specimens submitted to the clinical microbiology laboratory were grown in 5% CO2 on colistin-nalidixic acid agar, Mueller-Hinton 5% sheep blood agar, and chocolate agar. Cultures positive for β-hemolytic streptococci were identified to the species level via MALDI-TOF MS. Disk diffusion D-zone testing was performed with 0.5 McFarland standards using erythromycin (15 µg) and clindamycin (2 µg) disks 12 mm apart on Mueller-Hinton 5% sheep blood agar plates incubated at 35°C in 5% CO2 for 20-24 hours. Susceptibilities to penicillin, erythromycin, clindamycin, and vancomycin were recorded per current CLSI breakpoints.

Results. A total of 512 GCS/GGS isolates were tested, of which n = 61 (28.8%) demonstrated clindamycin resistance; 85% were clindamycin resistant via a positive D-zone phenotype with 14.8% that were constitutively clindamycin resistant. A total of n = 86 GAS isolates were tested, of which n = 9 (10%) demonstrated clindamycin resistance. As reported clindamycin resistance was via a positive D-zone phenotype with 56% which were constitutively clindamycin resistant.

Conclusion. Clindamycin resistance among GAS and GGS was present in 24.5% of the isolates tested with 10% for GAS. As a proportion of the total number of isolates tested, inducible resistance was 14.5% more frequent among GAS than GGS that was observed for GAS. This study demonstrates a higher proportion level of clindamycin resistance in GCS/GGC compared with GAS infections detected over the same study period.

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2100. Use of PCR for Diagnosis of Group A Streptococcal Pharyngitis in the United States, 2011–2015

Robert Luo, MD, MPH1; Joanna Sicker, MPH, MBA2; Farnaz Vahidnia, MD, MPH, PhD3; Yuan-Chi (Daisy) Lee, MSc4; Joanna Sickler, MPH, MBA5; Robert Rosario, MD, MHP6; James Brown, MD7; Thomas Mathew, PhD8; Roche Molecular Systems, Pleasanton, California, 1Medical and Scientific Affairs, Roche Molecular Systems, Pleasanton, California, 2Roche Diagnostics Information Solutions, Pleasanton, California, 3Genetec, San Francisco, California, 4Family Medicine, University of Washington, Seattle, Washington, 5Family Medicine, University of Washington, Seattle, Washington

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Background. Although rapid antigen testing and culture are recommended for diagnosis of Group A Streptococcal pharyngitis in the US, polymerase chain reaction (PCR) tests are used more widely abroad. This study aimed to assess diagnostic yield and management of strep throat in the USA from 2011 to 2015, and to the extent which PCR and other diagnostic modalities were utilized.

Methods. A retrospective cohort analysis was performed using the 2011–2015 MarketScan Commercial and Medicare databases, covering over 200 million insured US individuals. Streptococcal sore throat, acute pharyngitis, or acute tonsillitis were reported for GAS. This was part of a projective study done in an emergency department (ED) in febrile children 1–16 years of age with pharyngitis. Throat swabs and blood samples were collected and testing for GAS was performed by 2 different rapid antigen detection tests (RADTs; StrepTop and mariPOC) in the ED and by throat culture in laboratory. In addition, frozen throat swabs were tested for GAS by two different nucleic acid amplification tests (NAAT; Focus 3M and Illumigene). Emm typing of GAS strains was performed from frozen isolates. Virus diagnostics was performed by NAAT and serology, and interferon response to virus infection was estimated by myxovirus resistance protein A (MxA) blood concentration.

Results. In total, 83 children (median age 5.5 years; interquartile range 3.2–12.2) were recruited in the study. Specimens from 78 and 48 patients were available for RADT and NAAT, respectively, and 13/19 of GAS isolates for emm typing. In comparison with throat culture results, sensitivities and specificities of GAS diagnostic tests were 72% and 95%, and 100% and 100% for mariPOC, 91% and 87% for Focus 3M and 91% and 96% for Illumigene, respectively. In GAS positive patients, virus detection and elevated blood MxA level (>125 µg/L) were more frequent when GAS diagnosis was based on mariPOC (54.5%) than when it was based on StrepTop (38.5%) test results. Emm typing GAS emm type 89 was detected in 7 patients of whom 6 also had a positive result in virus detection (P < 0.055).

Conclusion. In comparison with throat culture, diagnostic performance of different GAS tests varies greatly. In children with febrile pharyngitis, enhanced sensitivity of the GAS was 14.5% to be associated with increased co-detection of viruses and interferon responses questioning the significance of GAS detection as a true causative agent in these patients. Detection of GAS emm type 89 was associated with GAS-virus co-detection.

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2102. Elevated Neutrophil-to-Lymphocyte Ratio is an Effective Prognosis Indicator In Extra-Pulmonary Tuberculosis

Houda Ben Ayed, MD1; Makram Koubaa, MD2; Fatma Smouai, MD3; Yosra Mejdoub, MD4; Tarak Ben Jemaa, MD5; Imed Maarouf, MD6; Souriyr Yaich, MD7; Mondher Abed, PhD, Director8; Sami Dammak, MD8; Chokri Marrakhchi, MD8; and Mourin Ben Jemaa, MD9; 1Department of Epidemiology, Hedi Chaker University Hospital, Sfax, Tunisia, 2Department of Infectious Diseases, Hedi Chaker University Hospital, Sfax, Tunisia, 3Tuberculosis Research Unit, Hedi Chaker University Hospital, Sfax, Tunisia

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Background. Extra-pulmonary tuberculosis (EPT) may lead to serious outcomes in the absence of prompt treatment. Factors related to poor prognosis (PP) are still insufficiently understood. The peripheral blood neutrophil to lymphocyte ratio (NLR) has been reported to correlate with the prognosis of many acute or chronic infectious diseases. In this perspective, we aimed to investigate the prognostic relevance of NLR in EPT patients.

Methods. Data were collected from EPT patients, diagnosed between 1990 and 2016. We defined a PP by the occurrence of clinical complications during the hospital-stay or the follow-up. We evaluated the performance of NLR in identifying PP. The Kaplan-Meier method was used to generate complication-free survival curves which were compared by Log rank test according to NLR categories. Cox proportional hazard regression analysis was used to reveal the independent prognostic factors.

Results. We included 265 patients with EPT among them 68 cases (25.7%) had a PP. The mean age was 42 ± 19.2 years. Sex ratio was 0.8, EPT in the 95% (35.8%, 35.8%) meningonephritis sites in 50 cases (19%) and bones in 42 cases (15.8%). Mean value of NLR was significantly higher in the PP group (4.5 ± 3 vs. 3.2 ± 2.5; P = 0.01). NLR had an Area Under the Receiving Operating Curve (AUROC) of 0.63 in predicting PP (P = 0.004). At an optimal cutoff of 2.7, sensitivity and specificity were 60% and 72%. NLR significantly higher than 2.7 was equal to 46% (29/61) cases. The positive predictive value of NLR was 67.2% where negative predictive value achieved 80%. Overall, the median complication-free survival was 35 days (C95% 19.2–46.7). When stratified by NLR cutoff, survival curves analysis showed that the one-month complication-free survival rate was lower in patients with high NLR (45% vs. 55%; P = 0.042). In multivariate Cox regression analysis, high NLR was an independent risk factor of predicting PP in EPT patients (HR = 1.7; 95%CI 1.1–2.9; P = 0.048).

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