2145. Carbapenem-Resistant Enterobacteriaceae infections at the Maharaj Nakorn Chiang Mai Hospital
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Background. Nowadays, carbapenem-resistant enterobacteriaceae (CRE) infection has been spreading worldwide in a tertiary care hospital and causing globally health damage. In Thailand, the studies of the epidemiology of CRE are scarce. This study aimed to describe epidemiology, clinical characteristics and treatment outcome of CRE infections.

Methods. A retrospective cohort study was conducted among patients admitted to the Maharaj Nakorn Chiang Mai Hospital between January 2014 and December 2016 who had clinical diagnosis of CRE infection. Characteristics between groups were compared using Chi-square, Fisher exact test or Student t-test, Mann–Whitney U test. Factors associated with mortality in univariate analysis were analyzed in the logistic regression model.

Results. Among 241 patients who had clinical specimens grew CRE, 51 had infection. Twenty-five patients (49%) were previously hospitalized within 90 days and 42 patients (82.4%) had exposure to antibiotics before documented CRE infection. The most common sites of clinical isolates were urine (33.3%), sputum (29.4%), and blood (21.6%). The mortality rate was 47.1%, which 17 (33.3%) patients’ death was attributable to CRE infection. Factor associated with mortality was higher body temperature (OR 9.8, 95% CI: 0.005) and thrombocytopenia.

Conclusion. CRE infections cause high mortality. Strategies to prevent emergence through prudent uses of antibiotics and transmission through infection control measures should be implemented in order to reduce mortality.

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2146. MALDI-TOF Mass Spectrometry Rapid Pathogen Identification and Outcomes of Patients with Bloodstream Infection: A Systematic Review and Meta-analysis
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Background. Several studies showed inconsistent results on the efficiency measures of the matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS) technology and patients’ clinical outcomes. A meta-analysis was conducted to determine the effectiveness of MALDI-TOF MS-based bacteriology in improving the accuracy of microbiology report and clinical outcomes.

Methods. PubMed and EMBASE databases were searched from database inception through March 1, 2018 for pre- and parallel comparative studies that evaluated the use of MALDI-TOF MS for identification of microorganism from bloodstream culture. Pooled-effect estimates were derived using the random-effects model. Univariate meta-regression on trial-level covariates was used to assess heterogeneity sources. Funnel plot, Begg’s and Egger’s tests were used to assess publication bias.

Results. Thirteen studies with 3,534 patients were meta-analyzed. Compared with conventional methods, MALDI-TOF MS was associated with 34% reduction in mortality (RR = 0.66; 95% CI: 0.54; 0.81; I² = 27.6%; 9 studies); 5.3-hour reduction in time-to-effective antibiotic therapy (95% CI: 6.4–4.3; I² = 98.0%); 24.5-hour reduction in time to identify bacteria (95% CI: 25.7–23; I² = 91.0%); 0.9-day reduction in hospital stay (95% CI: 1.4–0.5; I² = 56.6%); and US$4,190 saving in direct hospitalization cost (95% CI: $−8,200; $−113; I² = 66.1%). No significant heterogeneity sources were found (all P-interaction from meta-regression > 0.05) and no statistical evidence for publication bias was found (all P > 0.05).

Conclusion. Rapid pathogen identification by MALDI-TOF MS with or without antibiotic stewardship was associated with reduced mortality, improved outcomes of bloodstream infection, and may be cost-effective among patients with bloodstream infection. Nevertheless, a multicenter randomized controlled trial is needed to confirm findings of these pre-post comparison studies.

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2148. Performance of the BioFire FilmArray Gastrointestinal Panel in a Clinical Setting of Infectious Diarrhea
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Background. Infectious diarrhea remains as one of the leading causes of morbidity and mortality worldwide among all age groups. Conventional methods for diagnosis are time consuming and expensive. The BioFire FilmArray gastrointestinal panel (FA-GIP) tests for 22 enteric pathogens, provides results in a few hours and improves healthcare costs. The impact on antibiotic stewardship is unknown.

Methods. We conducted a retrospective cohort, multi-center study to evaluate FA-GIP clinical performance in hospitalized patients with acute diarrhea. Patients from 3 hospitals from the Christus Muguerza health group were included between January 2017 and August 2018. The FA-GIP was ordered by the treating physician and was not influenced by the study. Duration of antibiotic therapy, length of hospital stay, and therapy modification were assessed. The comparison group consisted of patients with acute diarrhea in which no FA-GIP was ordered.

Results. Data from 130 patients with FA-GIP and 107 patients with conventional methods were collected. Pathogens were detected by FA-GIP in 72.3% of the cases. The median duration of antibiotic therapy in FA-GIP group was 5 days (IQR 0–8) vs. 3 days (IQR 0–6) in conventional methods group, (P < 0.05). The mean length of stay was 3.3(D ± 2.4) in FA-GIP group vs. 1.9 (SD ± 1.0) in the control group (P < 0.05).

Patients in FA-GIP group had more days with diarrhea, lower hemoglobin levels, and higher creatinine levels at admission (Table 1). The most frequent pathogens detected were enteropathogenic Escherichia coli in 24.4%, norovirus in 19.1%, Clostridium difficile in 17.0% and Campylobacter jejuni in 15.9% (Table 2). Therapy modification after FA-GIP results was made in 51.1% of the patients with a detected pathogen, and in 42.8% of patients with no pathogen detected in FA-GIP the antibiotic was stopped.

Conclusion. Patients in the FA-GIP group had a more complex clinical scenario upon admission, they also had a longer duration of antibiotic therapies and longer length of stay. Although antibiotic therapy was positively influenced by the FA-GIP result, and no pathogen detection leads to withdrawal of unnecessary antibiotics.

Table 2: 2 Pathogens detected by FA-GIP

Table 3: Antibiotic related infections (other than UTI)

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2149. Performance of a Gradient Diffusion Method (Etest®) on Mueller–Hinton Agar with Sheep Blood for Aerococcus urinae Antimicrobial Susceptibility Testing
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Background. Resistance to antibiotics is a significant concern for Aerococcus urinae, an emerging uropathogen of the genus Aerococcus, newly classified as genus Caulobacter, which is of growing significance in urinary tract infections.

Methods. A two group comparison was performed. Group 1 consisted of A. urinae strains isolated from 32 patients with urinary tract infections who showed antimicrobial resistant phenotype. Group 2 consisted of the same isolates with sensitive phenotype after treatment with ceftriaxone. The Etest was used to determine MIC for ceftriaxone and compared to CLSI standards.

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