

Department of Infection Control

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General Summary

We performed both basic and clinical research in the following areas: bacterial infection and chemotherapy, opportunistic infection in patients with human immunodeficiency virus/acquired immunodeficiency syndrome, parasitic/vector borne diseases, and outbreak and infection control.

Research Activities

Predictive factors for metastatic infection in patients with Staphylococcus aureus bacteremia

Metastatic infections, such as infective endocarditis and pyogenic spondylitis, are very serious complications of *Staphylococcus aureus* bacteremia (SAB), because failure to identify metastatic infections may cause poor prognosis. We aimed to investigate predictive factors for metastatic infection during SAB, including Methicillin-Resistant *S. aureus* (MRSA). This retrospective cohort study was conducted among patients with SAB at the Jikei University Kashiwa Hospital between January 2014 and October 2016. During study period, 61 patients met the inclusion criteria and were assessed. Metastatic infection occurred in 18 of 61 patients (29.5%), including spondylitis (9), infective endocarditis (2) and psoas abscess (5). This study suggested that physicians should be noted metastatic infection in the patients with persistent fever and persistently high CRP level during *S. aureus* bacteremia.

Prevalence and drug-susceptibilities of extended-spectrum β -lactamase (ESBL) producing Escherichia coli strains isolated from urine

We investigated the prevalence, drug susceptibilities of ESBL producing *E. coli* isolated from urine and genotyping of ESBL. ESBL producing *E. coli* were isolated from 95 patients. Community-acquired infection cases numbered 72 (75.8%). As for genotyping of ESBLs, the CTX-M-9 group were 73 strains (76.8%). All strains were sensitive to MEPM, DRPM, IPM, TAZ/PIPC, FMOX, CMZ, FRPM and AMK. Ninety-eight percent of these strains was sensitive to FOM. We should pay attention to the choice of antimicrobials for urinary tract infections caused by ESBL producing *E. coli* with continuous investigation of their drug-susceptibilities.

Seroepidemiology and risk assessment of Toxoplasma gondii infection in HIV/AIDS patients

A. Sabin and H. Feldman reported dye test, the first serodiagnosis of toxoplasma, in 1948. The classic serodiagnosis still performs high sensitivity and specificity used as a referential diagnosis method. However, a skillful operator is essential for the complicated pro-

cess and evaluation in dye test, which further improvement is expected. We tackled this issue with a green fluorescent protein expressed tachyzoite, which is the alternative marker for evaluating deactivation of the tachyzoite. The new improved dye test, Toxoplasma Killing Observation (TOKIO) test, has an advantage over classical dye test in either the process or the evaluation.

Additionally, we have validated the consistency of both tests in experimental infection with micro-mini-pigs and samples of HIV infected patients. We now aim to uncover the accurate sensitivity and specificity of TOKIO test in human samples.

TeamSTEPPS introduction strategies for hospital infection control

Team STEPPS and unit based patient safety program have been introduced to infection control since 2013. The hand hygiene compliance rate rose about 1.5 times from 2013 to 2016 (47→69%). It was suggested that communication between staff and formation of mental model of team through teamSTEPPS and introduction of small group improvement activity by department were useful for infection control.