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Session: 228. Diagnostics: Bacteria and Mycobacteria
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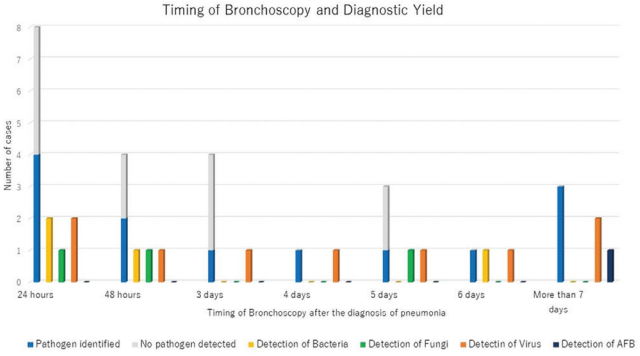
Background. Pneumonia is one of the main causes of morbi-mortality in acute leukemia (AL) patients. The positive yield of microbiology diagnosis is still significantly low. The aim of the study was to evaluate the possible impact of use of diagnostic methods (within first 48 hours of diagnosis) in AL patients with pneumonia during chemotherapy.

Methods. Retrospective study (January 2017–December 2017) at MD Anderson Cancer Center. The medical records of adult patients with AML, MDS, or ALL who developed CT-confirmed pneumonia after induction or second-line chemotherapy were reviewed, including demographic, clinical, microbiology data, and outcomes.

Results. During 2017, 174 patients with AL developed pneumonia confirmed by CT chest. Fifty (29%) of them during induction/second-line chemotherapy: 42 (84%) AML, five (10%) MDS, and three (6%) ALL. Thirty-one (62%) showed consolidation in CT, 14 (28%) nodules, and five (10%) both findings. Mean age was 65 (SD: 11.5, range: 24–87) years with 46% males. Thirty-three (66%) patients had neutropenia (ANC<500) at the time of pneumonia. ID was consulted in 38 (76%) and pulmonary in 37 (74%) patients. Bronchoscopy/BAL (bronch) was performed in only 24 (48%) patients, still with the highest diagnostic yield (13/24, 54%) compared with other diagnostic methods (sputum and blood cultures; and galactomannan, β-glucan, and cryptococcal antigen in serum). Twelve of 24 (50%) patients had an early bronch (within 48 hours), with higher identification of bacteria (3/12, 25%), fungi (2/12, 16.7%), and virus (3/12, 25%) compared with those 12 performed later. A trend of more viral infection (6/12, 50%), including CMV, was found in late-performed bronch (>48 hours after diagnosis). The patients with early bronch were sicker, with higher rate of ICU admission (42% vs. 0% in late group) and in-hospital mortality (25% vs. 8% in late group). However, those patients who underwent bronch later had a higher rate of 30-day re-admission (33% vs. 22% in early group).

Conclusion. Bronchoscopy/BAL was the best diagnostic test in patients with AL and CT-confirmed pneumonia, even though it was only performed in 48% of patients. Early bronchoscopy (first 48 hs) has better diagnostic yield than late bronchoscopy (>48 hs), directing the antimicrobial therapy on these patients (based on the identification of bacteria, fungus or viruses), and decreasing the 30-day re-admission rate.



Disclosures. **J. Adachi**, Merck: Grant Investigator, Research grant.

2009. Misidentification Rate of *Acinetobacter baumannii* Isolated From Invasive Infections in Children

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Background. *Acinetobacter baumannii* (AB) invasive infections are known to have a worse clinical outcome than non-*baumannii Acinetobacter* infections. However, currently, phenotypic identification by semi-automated commercial identification systems struggle to distinguish *Acinetobacter* subspecies; especially the four closely related subspecies of the *Acinetobacter calcoaceticus–Acinetobacter baumannii* (ACB) complex. The purpose of this study was to examine the rate of misidentification of AB isolated from invasive infections in children.

Methods. From January 2001 to December 2017, patients 18 years old and below who were treated for invasive AB infections at Seoul National University Hospital and Chungnam National University Hospital were included. *Acinetobacter baumannii*, identified by commercial identification systems, cultured from sterile body fluids of the study participants were prospectively collected. The DNA from the stored bacteria were isolated, and subspecies identification was carried out by PCR and sequencing of the partial *gyr*B gene. Clinical data were retrospectively reviewed.

Results. During the 17-year study period, 113 AB isolates were obtained from patients treated for invasive infections. The median age of the patients was 2 (IQR 0–7) years old and 47 (49.5%) were male. Duplicate isolates were eliminated, and a total 95 isolates underwent further investigation. The isolates were retrieved from the blood (n = 82), peritoneal fluid (n = 8), pleural fluid (n = 2), cerebrospinal fluid (n = 2), and bronchoalveolar fluid (n = 1). Of the AB isolates identified by the commercial identification systems, 55 (57.9%) were AB. Of the non-AB isolates identified by partial *gyr*B sequencing, 22 (23.2%) were identified as *A. nosocomialis*, 8 (8.4%) as *A. pittii*, and 1 (1.1%) as *A. calcoaceticus*. Non-ACB complex subspecies included *A. soli* (n = 3), *A. seifertii* (n = 3), *A. iwoffii* (n = 1), *A. bereziniae* (n = 1), and *A. junnii* (n = 1).

Conclusion. There was a high rate of misidentification of the *Acinetobacter* subspecies causing invasive infections in children. Further studies are needed to analyze the burden that misidentification has on the treatment and outcome of patients with invasive infections.

Disclosures. **H. Lee**, Korean Society of Pediatric Infectious Diseases: Member, Research grant.

2010. Volatile Organic Compounds Patterns in Breath, Plasma, and Stool in Patients with *Clostridium difficile* Infection: A Cross-Sectional Proof of Concept Study

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Background. Volatile organic compounds (VOCs) are hydrocarbon compounds which are end product metabolites of physiological and pathophysiological processes. Many disease processes can be identified by examining metabolome patterns in clinical samples from patients. The purpose of this study was to identify *Clostridium difficile* infection (CDI) based on differences in VOCs in stool, blood and breath of patients with CDI and controls without.

Methods. Patients aged >18 years at Cleveland Clinic with *CDI* (> 3 watery stools in the preceding 24 hours and stool PCR positive for *C. difficile*), and matched controls (for age, sex, and date of PCR test) were included. Stool and plasma samples (within 24 hours of collection) and fresh breath samples were collected. Headspace gas from clinical samples was tested using selected ion flow tube mass spectrometry (SIFT-MS) on a VOICE200 instrument (*Syft Technologies Ltd., Christchurch, New Zealand*). The MS assay comprised of 22 common analytes: 2-propanol, acetaldehyde, acetone, acetonitrile, acrylonitrile, benzene, carbon disulfide, dimethyl sulfide, ethanol, isoprene, pentane, 1-decene, 1-heptene, 1-nonene, 1-octene, 3-methyl hexane, 2-nonene, ammonia, ethane, hydrogen sulfide, triethyl amine, and trimethyl amine. VOC analysis findings were classified as positive or negative using the K-nearest neighbors (KNN) method. Model accuracy was evaluated by k-fold cross-validation with 5-folds. Sensitivity and specificity were determined and receiver-operating characteristics curves generated for each sample type.

Results. Thirty-one patients with CDI and 31 controls were studied. The optimal KNN classifier model was achieved with k = 7, 5, and 9, for breath, plasma, and stool samples, respectively. The sensitivity/specificity for detection of CDI were 87.1%/77.4%, 66.7%/63.6%, and 61.3%/36.4%, for breath, stool, and plasma samples, respectively. Model accuracy was no better if positives were limited to those with *C. difficile* PCR CT <30 cycles.

Conclusion. VOC analysis of fresh breath, but not plasma or stool samples ≤24 hours old, by the method studied had good sensitivity and moderate specificity for identifying patients with CDI.

Disclosures. **All authors:** No reported disclosures.