781. Non-Tuberculous Mycobacterium: Often a Missed Entity

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Background. Initially referred to as Lady Windermere syndrome, the prevalence of Non-Tuberculous Mycobacterium (NTM) is on the rise globally. In India, the TB capital of the world, these infections still go unrecognized, as the clinical presentation of all mycobacterial diseases are similar. This is of clinical relevance as misdiagnosis may lead to underattribution or inappropriate treatment.

Methods. We conducted a retrospective study of adults suspected of having mycobacterial infection. Records of patients admitted with suspected TB from January 2015 to December 2017 were reviewed; clinicoradiological features were correlated with the organisms isolated; treatment given and outcomes were recorded.

Results. Out of 877 suspected patients, 245 patients had microbiologically proven Mycobacterium tuberculosis and 34 had NTM (3.8%). Pulmonary infection was seen in 19 cases (56%), rest were extra pulmonary (34%).

Fever was the commonest symptom (62%) others being cough (50%), breathlessness (41%), hemoptysis (15%), weight loss (5%), chest pain (3%), and back ache (12%). Symptoms were prolonged (>1 month) in 65% of cases. Radiologically, cavitary disease was noted in 68% of cases. Past tuberculosis was the major risk factor noted in none of our patients. Twenty-four out of 34 cases were AFB smear positive.

Conclusion. NTM is an underreported infection in a developing country like India with a high TB prevalence. Similar clinical features and morphology create a greater diagnostic dilemma. Usage of molecular techniques and AFB culture should be improved with macrolide regime.

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782. Risk Factors, Clinical Characteristic, and Treatment Outcomes for Nontuberculous Mycobacterial Disease in Mexico

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Background. Nontuberculous Mycobacteria (NTM) cause diverse clinical manifestations in multiples clinical setting, and in the past years, there has been an increasing prevalence and variability among geographic regions, this associated with a diversity of hosts and clinical manifestations. We objective was evaluated the clinical and microbiologic characteristics, and the treatment outcomes related to slowly growing mycobacteria (SGM) and rapidly growing mycobacteria (RGM).

Methods. When conducting a retrospective study between January 2001 and December 2017, retrospectively their medical records were reviewed for obtainments of site of isolation or infection, comorbidities or predisponent condition, clinical and radiographic presentation, and treatment outcomes.

Results. A total of 90 patients with isolated of RGM and 87 within SGM were evaluated among these M. avium and M. fortuitum were the most predominant species. HIV infection was the predominant risk factor for SGM infections (P < 0.001); the conditions associated to RGM infections were cancer (P = 0.0278); diabetes mellitus (DM) (P = 0.0148), chronic kidney disease (CKD) (P = 0.04662), use of immunosuppressive medication (P < 0.001), and use of invasive device only were present in the RGM group. In the RGM group, lung infection was the most common site of infection (43%); in the SGM group, the disseminated disease was the most common (54%). The time of treatment was more prolonged in the SGM group (196 vs. 229 days, P = 0.0039). In the RGM group, the rate of failure in the subgroup of Mycobacterial skin infections and disseminated disease (15 vs. 5, P = 0.0146). In the analysis of lung infection who meet the IDSA/ATS criteria were divided into the group with treatment and the group without treatment, the outcomes were not significant in both groups.

Conclusion. The NTM infection is the cause of disease in patients with chronic conditions such as cancer, immunosuppressive medication, CKD, use of invasive device, and DM. HIV infection persist as the first risk factor for M. avium disseminated disease, the treatment for this latter condition in spite of more prolonged, it had a lower rate of cure. The treatment of lung infections for NTM should be individualized although the IDSA/ATS criteria are met.

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783. Characterization of Non-tuberculous Mycobacteria Isolates in a National Mycobacterial Laboratory in Panama: 2012–2015

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Background. Nontuberculous mycobacteria (NTM) are becoming more frequent and isolated in microbiological laboratories. There is no standardized diagnostic, treatment, and/or monitoring of patients with NTM disease. We described the experience of the Panama National Mycobacterial Laboratory in isolating NTM in patients suspected to have active tuberculosis in Panama.

Methods. Data registries of the National TB Program Laboratory of Panama between 2012 and 2015 were reviewed. Demographic information, relevant history, sample source, and isolate identified for each specimen obtained at the time of specimen submission was extracted. Identification of mycobacterial species were made using culture and PCR. Data were exported to an Excel workbook and a descriptive analysis was performed using STATA.

Results. A total of 4,545 samples were received during this period. Of these, 288 (6.3%) were not processed. From the remaining 4,257 samples, 705 (16.5%) were negative, 2,783 (65.3%) were positive for M. tuberculosis, and 769 (18%) were confirmed NTM. NTM species identification was achieved in 715 (93%) using PCR. Median age was 55 years (92); 49.4% were male. The most frequent NTM isolate was M. avium complex in 172 (22.3%) samples, followed by M. fortuitum in 131 (17%). M. chelonae was isolated in 98 (12.7%) samples, M. gordonae in 50 (6.5%), M. scrofulaceum in 20 (2.6%), and M. intracellular in 16 (2.0%). NTM isolation steadily rose over the study period with 490 (63.7%) of the samples being from 2015 and 465 (94.5%) of these typed by PCR. Specimens mainly originated from the Panama metropolitan area (88.2%) and were mostly sputum samples (70.8%).

Conclusion. Nontuberculous mycobacteria represented an important proportion of isolates among TB suspects in Panama. The implementation of more sensitive diagnostic techniques is increasing the recovery of NTM. Further evaluation of the clinical significance of these finding is required for appropriate guideline implementation.

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785. Treatment of Mycobacterium abscessus Skin and Soft Tissue Infections: A Case in a Peritoneal Dialysis Patient

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Background. Mycobacterium abscessus is a somewhat recently identified species of rapidly growing nontuberculous mycobacteria. Due to its genetic relatedness to M. abscessus and M. chelonae, resistance patterns of rapidly growing nontuberculous mycobacteria species can make them difficult to treat. This is particularly true of M. abscessus, in part due to the infrequency of reported cases of human infection and limited data to guide therapy.

Methods. We present here a case of M. abscessus skin and soft-tissue infection at the site of insertion of a peritoneal dialysis catheter in a patient with end-stage renal disease. He initially presented with nodular subcutaneous lesions around his catheter site that progressed through oral antibiotics. This led to sampling which confirmed the diagnosis of M. abscessus. We conducted a review of the literature to identify previously reported cases of M. abscessus, including skin and soft-tissue infections, and used these data to guide management.

Results. We reviewed 11 reports (cases and case series) of Mycobacterium abscessus in vitro and in vivo. Several required surgical debridement, as was the case with our patient. His PD catheter was removed and he was treated empirically with amikacin, azithromycin, and tigecycline. After this, he was re-admitted with fever, and tigecycline was discontinued. His total hospitalization was 2 weeks long and he was discharged without any evidence of active infection. Our patient’s skin biopsy was sent to the mycobacterial lab, and we await the report. Overall, the infection responded well to treatment with CEF and AVI.

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786. Ceftaroline and Avibactam? Is This a Potential Combination for Mycobacterium abscessus Infection?

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Background. Mycobacterium abscessus harbors a β-lactamase enzyme, Blaβ, able to hydrolyze penicillins, most cephalosporins and carbapenems. As of today, management of M. abscessus with β-lactams does not include combination of β-lactamase inhibitors. The potential benefit of combinations of several β-lactams with new diazabicycloclooctane (DBO) inhibitors, such as relbeactam and avibactam, has not been well studied. Based upon the ability to inhibit BlaMab by highly potent DBO inhibitors, our goal herein was to investigate the efficacy of a novel combination, ceftaroline (CEF) and avibactam (AVI), to restore susceptibility to β-lactam antibiotics and inhibit growth.

Methods. Minimum inhibitory concentrations (MICs) of CEF with or without AVI were examined using the microdilution method.

Results. MICs of CEF is 8 mg/L in the presence of 4 μg/mL of AVI, the CEF decreased to <4 mg/L in 31 of 35 cases (Table).

Conclusion. Our results add to the growing evidence of using β-lactams as agents effective against Mycobacterial infections. The inhibition of hydrolytic activity of (Blamab) using DBOs such as AVI suggest that this combination should be evaluated in animal and clinical models.

Table 1: MICs of M. abscessus Strains (mg/L)

| Avibactam (AV), Ceftaroline (CEF) | CEF | CEF+AVI |
|---------------------------------|-----|---------|
| M. ab 15-103                    | 8   | 0.25    |
| M. ab 15-442                    | 8   | 1       |
| M. ab 13-7-1061                 | 8   | 0.5     |
| M. ab 15-305                    | 16  | 2       |
| M. ab 15-60 (β-lactam)          | 16  | 1       |
| M. ab 15-228                    | 8   | 0.5     |
| M. ab 15-206                    | 128 | 1       |
| M. ab 15-235                    | 8   | 0.5     |
| M. ab 13-7-496                  | 32  | 2       |
| M. ab 13-10308519               | 16  | 16      |
| M. ab 15-15-148                 | 16  | 2       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |
| M. ab 13-10561                  | 4   | 1       |

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787. The Addition of Avibactam Augments the Activity of Piperacillin Against Mycobacterium abscessus in vitro, and Is Effective in Treating M. abscessus Infection in a Galleria mellonella in vivo Model

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Background. Mycobacterium abscessus is an emerging multi-drug-resistant pathogen, harboring the β-lactamase Blaβ, Avibactam is a non-β-lactam, β-lactamase inhibitor.

Results. We reviewed 11 reports (cases and case series) of Mycobacterium abscessus in vitro and in vivo. Several required surgical debridement, as was the case with our patient. His PD catheter was removed and he was treated empirically with amikacin, azithromycin, and tigecycline. After this, he was re-admitted with fever, and tigecycline was discontinued. His total hospitalization was 2 weeks long and he was discharged without any evidence of active infection. Our patient’s skin biopsy was sent to the mycobacterial lab, and we await the report. Overall, the infection responded well to treatment with CEF and AVI.

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