

OS-033

Mycobacterial Diseases

Increased Serum CA 19-9 Levels in Pulmonary Nontuberculous Mycobacterial Disease

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Background: CA 19-9 is a useful marker for the diagnosis of gastrointestinal cancer including pancreatic cancer. However, there are several previous studies about CA 19-9 elevation in benign lung diseases like emphysema, fibrosis and bronchiectasis. This study investigated the clinical significance of serum CA 19-9 elevation in pulmonary nontuberculous mycobacterial (PNTM) disease, compared with pulmonary TB.

Method: Serum CA 19-9 in patients with PNTM (n=59) and pulmonary TB (n=36) were measured. Multivariate logistic regression analysis was performed to evaluate the factors related to CA 19-9 elevation in PNTM disease. The sequential changes in serum CA 19-9 before and after treatment were compared between pulmonary TB and PNTM disease.

Results: The median CA 19-9 level was higher in patients with PNTM disease than pulmonary TB (PNTM: 13.80, TB: 5.85, $P < 0.001$). However, after adjusting for age, sex, radiologic severity and previous TB history, the CA 19-9 levels between two groups were not different (PNTM: 28.35, TB: 12.68, $P = 0.471$). Among 59 patients with PNTM disease, serum CA 19-9 levels were elevated in 11 (18.6%). *M. abscessus* species (OR 10.37, 95% CI: 1.96, 54.93; $P = 0.006$) and extensive pulmonary lesions more than three lobes (OR 6.37, 95% CI: 1.02, 39.60, $P = 0.047$) were significantly associated with an elevated CA 19-9 levels. While the CA 19-9 levels showed a tendency to decrease during successful treatment of PNTM disease, but not in pulmonary TB.

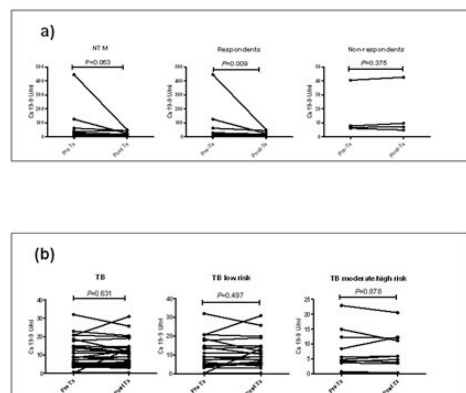
Conclusions: Serum CA 19-9 level was increased in substantial proportions of the patients with PNTM disease and it may be useful in the monitoring of therapeutic responses of PNTM disease.

Table 1. Factors associated with elevated CA 19-9 levels in patients with pulmonary nontuberculous mycobacterial (PNTM) disease

	Univariate		Multivariate	
	OR (95% CI)	P value	OR (95% CI)	P value
Age	0.94 (0.78, 1.02)	0.118	—	—
BMI	0.99 (0.79, 1.24)	0.946	—	—
Past TB	4.25 (1.07, 16.85)	0.039	3.52 (0.68, 18.36)	0.135
Cavity	0.63 (0.15, 2.66)	0.525	—	—
AFB positivity	0.84 (0.16, 4.55)	0.844	—	—
Extension more than half	6.87 (1.34, 35.3)	0.021	6.37 (1.02, 39.60)	0.047
<i>M. abscessus</i> complex	11.56 (2.55, 52.41)	0.002	10.37 (1.96, 54.93)	0.006

BMI: body mass index, TB: tuberculosis, AFB: acid fast bacilli, *M. abscessus* complex: *Mycobacterium abscessus* complex includes *M. abscessus* species and *M. massiliense* species.

Figure 1. The trend of CA 19-9 level before and after treatment in patients with pulmonary nontuberculous mycobacterial (PNTM) disease (a) and patients with active TB (b)



OS-034

Mycobacterial Diseases

Intermittent Antibiotic Therapy for the Nodular Bronchiectatic Mycobacterium Avium Complex Lung Disease

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Background: Although intermittent, three-times-weekly, therapy is recommended for initial treatment for the non-cavitary nodular bronchiectatic Mycobacterium avium complex (MAC) lung disease, supporting data are limited. This study is conducted to evaluate the clinical efficacy of intermittent therapy compared with daily therapy for the nodular bronchiectatic MAC lung disease.

Methods: A retrospective cohort study of 217 patients with treatment-naïve non-cavitary nodular bronchiectatic MAC lung disease. These patients received daily (n = 99) or intermittent therapy (n = 118) which included clarithromycin or azithromycin, rifampin, and ethambutol.

Results: Modification of initial antibiotic therapy occurred more frequently in daily therapy group than in intermittent therapy group (46% vs. 21%, $P < 0.001$). In particular, ethambutol was more frequently discontinued in daily therapy group than in intermittent therapy group (24% vs. 1%, $P < 0.001$). However, rates of symptomatic improvement, radiographic improvement, and sputum culture conversion were not different between two groups (daily therapy vs. intermittent therapy; 75% vs. 82%, $P = 0.181$; 68% vs. 73%, $P = 0.402$; 76% vs. 67%, $P = 0.154$; respectively). In addition, adjusted proportion of sputum culture conversion rates was similar between daily therapy group (71.3%, 95% confidence interval [CI] 59.1-81.1%) and intermittent therapy group (73.6%, 95% CI 62.9-82.2%, $P = 0.785$).

Conclusions: These results suggested that intermittent three-times-weekly therapy with macrolide, rifampin, and ethambutol is a reasonable initial treatment regimen to patients with non-cavitary nodular bronchiectatic MAC lung disease.

OS-035

Mycobacterial Diseases

Treatment Outcomes in 70 Patients Undergoing Adjuvant Resectional Surgery for Nontuberculous Mycobacterial Lung Disease

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Background: Outcomes of antibiotic treatment for lung disease caused by nontuberculous mycobacteria (NTM) are unsatisfactory.

Methods: We conducted a retrospective review of 70 patients who underwent pulmonary resection for NTM lung disease from March 2007 to February 2013. All patients received recommended antibiotic treatment before and after the surgery.

Results: A total of 70 patients underwent 74 operations. The median age of the patients was 50 years (IQR, 43-58 years). Of the 70 patients, 45 (64%) had Mycobacterium avium complex infection (24 M. intracellulare and 21 M. avium), 23 (33%) had M. abscessus complex infection (15 M. abscessus and 8 M. massiliense), and two (3%) had mixed infection. Thirty-eight (54%) patients had the nodular bronchiectatic form and 28 (40%) had the fibrocavitary form of NTM lung disease. The indications for surgery were a poor response to drug therapy (n = 52), remnant cavitary lesions and severe bronchiectasis (n = 14), and hemoptysis (n = 4). Preoperative sputum acid-fast bacilli staining results were positive in 44 (63%) patients, and sputum culture was positive in 54 (76%). The surgery included lobectomy or lobectomy plus segmentectomy (n = 50, 68%), segmentectomy (n = 11, 15%), pneumonectomy or completion pneumonectomy (n = 8, 11%), bilobectomy or bilobectomy plus segmentectomy (n = 4, 5%), and one wedge resection. Postoperative complications occurred in 15 (21%) patients, including postoperative death (n = 1) and bronchopleural fistula (n = 5). A negative sputum culture was achieved and maintained in 57 (81%) patients.

Conclusions: Although adjuvant pulmonary resection is associated with a relatively high complication rate, this procedure could provide a high level of treatment success for selected patients with NTM lung disease, such as those with a poor response to antibiotic treatment alone.