800. Drug-Resistant TB: An Experience From Qatar
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Background. Drug-resistant tuberculosis (DR-TB) is an important issue for public health. This study was conducted to evaluate the characteristics, treatment outcome, and risk factors associated with 223 DR-TB cases in the State of Qatar.

Methods. A descriptive records-based retrospective study was conducted on patients registered at Communicable Disease Centre (CDC), Qatar to all consecutive microbiologically confirmed tuberculosis cases for the period January 2010–March 2015. Demographic and clinical data extracted included: patient's age, sex, and country of origin; disease (pulmonary or extra-pulmonary); presence of comorbidities; HIV/AIDS status, previous chemotherapy and/or previous treatment for TB, and anti-TB drug resistance. The resistance pattern of isolated mycobacteria. The sputum culture conversion rate and treatment outcome was assessed for the patient who completed their treatment in Qatar.

Results. Of 330 patients with positive M. tuberculosis culture were analyzed; 223 (6.7%) were resistant to one or more first-line drugs, to isoniazid in 3.1% (n = 102), streptomycin in 1.2% (n = 41), rifampicin in 0.2% (n = 6), ethambutol in 0.15% (n = 5), and multi-drug resistance in 1.2% (n = 38) of patients. Among the resistant TB patients, more common demographic characteristics were former residents of Indian subcontinent (64.1%). A history of anti-TB treatment was not a risk factor with drug resistance in our cohort. Only 111 (49.7%) patients were tested for HIV antibodies and the results were all negative. There was significant correlation between the type of drug resistance and Mantoux finding (23.3% of patients had MDR-TB anti-TB drug resistance the resistance pattern of isolated mycobacteria. The sputum culture conversion rate and treatment outcome was assessed for the patient who completed their treatment in Qatar.

Conclusion. Drug-resistant TB in Qatar is influenced by migration, especially from the Indian subcontinent, where the patients were probably infected. Rapid sputum sampling performed in the early stages of the disease, patient isolation, and drug susceptibility testing should be the standard of care to avoid further transmission and improve TB control.

Disclosures. All authors: No reported disclosures.

802. Use of N-Acetylcysteine for Prevention and Treatment of Isoniazid Induced Liver Injury During Treatment of Mycobacterial Infections
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Background. Hepatotoxicity secondary to therapy for Mycobacterium tuberculosis (MTB) is a common complication that may lead to treatment interruption. N-Acetylcysteine (NAC) exerts a hepatoprotective effect by repleting glutathione stores and enhancing the cellular antioxidant defense mechanism. NAC has been found to be protective against liver toxicity in animals treated for MTB infection. Randomized controlled trials have shown that its use in humans also decreases the risk of hepatotoxicity associated with anti-MTB treatment but there is minimal data regarding its utility for treatment of liver toxicity.

Methods. Patients who received NAC from January 2012 to March 2018 for prophylaxis and treatment of increasing liver function tests (LFTs) while on isoniazid (INH) were included. A retrospective review of the medical record system was performed.

Results. Nineteen patients were included. Eight received NAC for treatment. The average age was 49 years. Seventy percent of patients were male. The mean BMI was 25. Five patients had underlying liver cirrhosis and two had hepatic steatosis. Eleven patients had Hepatitis C (HCV) and one had active Hepatitis B infection. Ten patients had MTB pulmonary infection, three had latent TB infection, two menigitis, and three patients had disseminated disease. One patient was treated for atypical mycobacterial infection. The treatment group received NAC for an average of 47 days. The treatment group had a favorable trend of liver enzymes after NAC initiation, with levels significantly improving by day 14 (Figures 1 and 2). Three patients did not require discontinuation of anti-biotics. INH was stopped prior to NAC initiation in four patients. No side effects of NAC were documented in any patient.

Conclusion. NAC is a safe and effective measure to prevent and treat hepatotoxicity secondary to INH therapy. More studies are needed to determine its optimal dose and duration for this indication.

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801. Emergence of Multi-Drug Resistance Tuberculosis During the Treatment Course of Pan-Susceptible TB: A Case Series
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Background. Successful treatment of tuberculosis (TB) requires monitoring for clinical, radiographic, and microbiologic improvement. Even after negative cultures are obtained, there should be continued monitoring of sputum. If cultures become positive during treatment of drug susceptible TB (DS-TB), there should be concern for multi-drug-resistant tuberculosis (MDR-TB). We present two cases diagnosed with MDR-TB during treatment. Case Report: Case 1: a 33-year-old male who was incarcerated in Peru. During incarceration in 2008, three of his cellmates had MDR-TB and he was diagnosed with DS-TB and treated with directly observed therapy (DOT) for 7 months. In Texas in 2015 he was diagnosed with DS-TB and was initiated on rifampin, isoniazid, pyrazinamide, and ethambutol (RIPE). Five months into DOT, his sputum became culture positive with molecular detection of drug resistance (MDRDR) and drug susceptibility testing (DST) revealing resistance to all of RIPE. Repeat MDDR and DST of the 2015 isolate showed no resistance. Genotyping of the two isolates were identical by mycobacterial interspersed repetitive units (MIRU) and spoligotyping. However, whole genome sequencing showed two different isolates. Case 2 is a 63-year-old female diagnosed with DS-TB in Saipan and started on RIPE in April 2017. She was on DOT until July when she moved to Texas and was lost to follow-up until September. She claims adherence with rifampin and isoniazid during this time. All sputa collected between diagnosis and September were smear and culture negative. Six months into therapy, she had sputa that was culture positive with MDRDR and DST showing MDR-TB. Her isolates from Saipan and Texas were sent for genotyping. The MIRU and spoligotyping showed two different isolates.

Conclusion. These cases show the importance of following cultures throughout treatment. Traditionally, MDR-TB is thought to be due to poor adherence. However, in high prevalence areas, heterogeneous infection with two different strains is an important consideration for the cause of MDR-TB. Concomitant infection of DS and MDR-TB can occur with MDR-TB not being detected until far into therapy. These cases present heterogeneous exogenous infection of DS and MDR-TB—only discovered through culture monitoring.

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