

Case Presentation

Patient History

A 55-year old female emigrated from El Salvador in the mid 1980's. She had been employed by a poultry processing plant for 15 years (high risk environment associated with TB transmission). Medical history included a diagnosis of rheumatoid arthritis which was treated with prednisone 20 mgs twice daily, methotrexate and Humira (adalimumab-a tumor necrosis factor alpha blocking agent (TNF α)). Six months later she was evaluated for GI upset, cough, shortness of breath, fatigue, chills, headaches, persistent fever, and a 16 pound weight loss. No diagnosis was made. The patient stopped her Humira and left the state to visit family in Virginia. Two months later she was hospitalized with generalized weakness, cough and shortness of breath. A tuberculin skin test (TST) was negative. Chest X-ray and CT scan revealed interstitial infiltrates throughout both lungs primarily affecting the upper lobes. An ultrasound guided lung biopsy revealed a positive AFB culture of *Mycobacterium tuberculosis*. She was placed on Rifampicin, Isoniazid (INH), Ethambutol, Pyrazinamide and Zithromax. Sensitivity results showed resistance to INH, Streptomycin (SM) and p-amino salicylic acid (PAS).

Medical Issues

TNF α blocking agents used for the treatment of rheumatoid arthritis, Crohn's disease and psoriasis have been associated with reactivation of tuberculosis. The three TNF α blockers, Infliximab, Etanercept and Adalimumab, work by blocking TNF α , an inflammatory cytokine expressed by activation of T cells and other immune cells. This process plays a crucial role in the host defense against *M. tuberculosis* and other intercellular pathogens. Before initiation of therapy, patients should be evaluated for active or latent TB infection (LTBI) by a TST. The patient should also be screened for additional risk factors for TB (i.e. foreign-born, congregate setting, place of employment, etc). If LTBI is diagnosed, treatment should be given for at least three to six months prior to starting the TNF α blocker.

Teaching Points

- Individuals who are being treated with TNF α antagonist agents for illnesses such as Crohn's disease and rheumatoid arthritis are at increased risk of active tuberculosis (*MMWR. August 5, 2004/Vol.53(30);683-86*).
- Individuals being treated with a TNF α blocker should be counseled to report development of any symptoms of tuberculosis (i.e. persistent cough, fever, unexplained weight loss, night sweats and fatigue) immediately to their physician.
- If active TB disease develops during TNF α blocker therapy, the TNF α blocker should be discontinued, at least until the antituberculous regimen has been started and the patient's condition has improved. The optimal time for resuming TNF α blocker therapy is undetermined. (*MMWR August 5, 2004/Vol.53(30);688-89*)
- A complete evaluation for tuberculosis should include: physical exam, onset and duration of symptoms, TST, bacteriological exam and chest radiograph.
- A TST may not be helpful in diagnosis of LTBI or disease in patients on >10-15 mgs of prednisone per day or on other immunosuppressive drugs. Some rheumatologists recommend that a TST of 5 mm should be considered positive in anyone with rheumatoid arthritis.
- There have been several TB outbreaks in poultry processing plants and other work sites with migrant workers who come from countries where there is a high prevalence of TB; therefore several companies who hire foreign-born workers have initiated employee TST screening programs to reduce the risk of exposure to TB.
- Failure to "think TB" in a patient who has cough, fever, chills and weight loss can cause a delay in diagnosis and increased the possibility of transmission of TB.