

## Anti-tuberculosis drugs

Test your knowledge!

- Q1:** A 35-year-old male, formerly a heroin abuser, has been on methadone maintenance for the last 13 months. Two weeks ago, he had a positive tuberculosis skin test (PPD test), and a chest radiograph showed evidence of right upper lobe infection. He was started on standard four-drug antimycobacterial therapy. He has come to the emergency department complaining of “withdrawal symptoms.” Which of the following antimycobacterial drugs is likely to have caused this patient’s acute withdrawal reaction?
- A. Ethambutol.
  - B. Isoniazid.
  - C. Pyrazinamide.
  - D. Rifampin**
- Q2:** A 42 year old male HIV patient was recently diagnosed with active tuberculosis. Currently, he is on a stable HIV regimen consisting of two protease inhibitors and two nucleoside reverse transcriptase inhibitors (NRTIs). What is the most appropriate regimen to use for treatment of his tuberculosis?
- A. Rifampin + isoniazid + pyrazinamide + ethambutol.
  - B. Rifabutin + isoniazid + pyrazinamide + ethambutol.**
  - C. Rifapentine + isoniazid + pyrazinamide + ethambutol.
  - D. Rifampin + moxifloxacin + pyrazinamide + ethambutol.
  - E. Amikacin + moxifloxacin + cycloserine + streptomycin.
- Q3:** Which of the following is correct regarding clofazimine in the treatment of leprosy?
- A. Clofazimine should not be used in patients with a deficiency in glucose-6-phosphate dehydrogenase (G6PD).
  - B. Peripheral neuropathy is one of the most common adverse effects seen with the drug.
  - C. Clofazimine may cause skin discoloration over time.**
  - D. The risk of erythema nodosum leprosum is increased in patients given clofazimine.
- Q4:** A 24-year-old male has returned to the clinic for his 1-month check-up after starting treatment for tuberculosis. He is receiving isoniazid, rifampin, pyrazinamide, and ethambutol. He states he feels fine, but now is having difficulty reading his morning newspaper and feels he may need to get glasses. Which of the following drugs may be causing his decline in vision?
- A. Isoniazid.
  - B. Rifampin.
  - C. Pyrazinamide.
  - D. Ethambutol.**
- Q5:** Which drug causes SLE?
- A. Isoniazid (INH)**
  - B. Rifampin
  - C. Azithromycin
  - D. Macrolides
- Q6:** INH can lead to which side effect?
- A. Neurotoxicity + Nephrotoxicity**
  - B. Rupture esophageal varices
  - C. Bleeding peptic ulcer
  - D. Tachycardia
- Q7:** A 28-year-old man underwent a tuberculin skin test that turned out to be positive. The man was the husband of a woman who had uncomplicated pulmonary tuberculosis treated at home with a multiple-drug regimen. The man was prescribed a drug to be taken daily for 6 months. Which of the following drugs was most likely given?
- A. Amikacin
  - B. Ethambutol
  - C. Isoniazid**
  - D. Ciprofloxacin
- Q8:** A 60- A 34-year-old immigrant with HIV disease complains of a productive cough with haemoptysis and night sweats. A sputum smear is positive for acid-fast bacilli. He is placed in isolation and started isoniazid, rifampin, pyrazinamide, and ethambutol. A few months later, he complains of a loss of his ability to discriminate certain colours. What is causing his vision impairment?
- A. Ethambutol**
  - B. Isoniazid
  - C. Rifampin
  - D. Pyrazinamide
- Q9:** A 34-year-old man with a history of recurrent tuberculosis on a multidrug regimen, including isoniazid. He went to a primary care physician complaining of his hands and feet. What is the most likely explanation?
- A) Diabetes mellitus
  - B) Lumbar disc disease
  - C) Spinal cord compression
  - D) Neurotoxicity**

**Q10:** A 45 year old homeless man presents to the emergency department with fever, weight loss, and a productive cough. Chest x ray shows right apical infiltrate and TB is suspected. He is started on empiric INH, rifampin and pyrazinamide. The primary reason for the use of drug combination in the treatment of this patient's TB is:

- A) Provide prophylaxis against other bacterial infections
- B) Ensure patient compliance with the drug regimen
- C) Delay or prevent the emergence of resistance**
- D) Background Increase antibacterial activity synergistically

**Q11:** A 22-year-old female intravenous drug user was admitted to the hospital with a 4-week history of cough and fever. A chest radiograph showed left upper lobe cavitory infiltrate. Cultures of sputum yielded *M. tuberculosis* susceptible to all antimycobacterial drugs. The patient received self-administered isoniazid, rifampin, pyrazinamide, and ethambutol. Two weeks following initiation of therapy, the patient is concerned that her urine is a "funny-looking reddish color." Which drug is the most likely cause?

- A. Isoniazid
- B. Rifampin**
- C. Pyrazinamide
- D. Ethambutol .

**Q12:** A 32-year-old man has been on standard four-drug therapy for active pulmonary tuberculosis for the past 2 months. He has no other comorbid conditions. At his regular clinic visit, he complains of a "pins and needles" sensation in his feet. Which drug is most likely causing this?

- A. Isoniazid**
- B. Rifampin
- C. Pyrazinamide
- D. Ethambutol

**Q13:** A 32-year-old man who takes standard four-drug therapy for active pulmonary tuberculosis complains about a "pins and needles" feeling in his feet. He is diagnosed with peripheral neuropathy. Which vitamin should have been included in the regimen for this patient to reduce the risk of neuropathy?

- A. Niacin
- B. Pyridoxine**
- C. Thiamine
- D. Ascorbic acid

**Q14:** A 46-year-old male patient with active tuberculosis is to be initiated on the four-drug regimen of isoniazid, rifampin, pyrazinamide, and ethambutol. The patient reports no other conditions except gout. Which pair of antituberculosis drugs has the potential to worsen his gout?

- A. Rifampin and isoniazid
- B. Ethambutol and pyrazinamide**
- C. Rifampin and ethambutol
- D. Isoniazid and ethambutol

**Q15:** A 24-year-old man returns to the clinic 1 month after starting treatment for tuberculosis. He is receiving isoniazid, rifampin, pyrazinamide, and ethambutol. He states that he feels fine, but now is having difficulty reading and feels he may need to get glasses. Which drug may be causing his decline in vision?

- A. Isoniazid
- B. Rifampin
- C. Pyrazinamide
- D. Ethambutol**

**Q16:** Q: Arthur Morgan is diagnosed with TB and was prescribed isoniazid and rifampin. What is the mechanism of action of INH?

- A. Inhibition of RNA Polymerase
- B. Inhibition of Transpeptidase enzyme
- C. Inhibition of 30s ribosomal subunit
- D. Inhibition of mycolic acid synthesis**

**Q17:** A 31-year-old white intravenous drug user was admitted to the hospital with a 4-week history of cough and fever. A chest radiograph showed left upper lobe cavitory infiltrate. Cultures of sputum yielded *M. tuberculosis* susceptible to all antimycobacterial drugs. The patient received isoniazid, rifampin, and pyrazinamide. The patient's sputum remained culture-positive for the subsequent 4 months. Which one of the following is the most likely cause of treatment failure?

- A. False positive cultures
- B. Concomitant reaction with HIV
- C. Patient noncompliance**
- D. Drug resistance

**QA to D Case:** A 21-year-old woman from Southeast Asia has been staying with family members in the United States for the last 3 months and is looking after her sister's preschool children during the day. Because she has difficulty with the English language, her sister escorts her to the emergency department of a local hospital. She tells the staff that her sister has been feeling very tired for the last month, has a poor appetite, and has lost weight. The patient has been feeling somewhat better lately except for a cough that produces a greenish sputum, sometimes specked with blood. A preliminary diagnosis of TB is Made.

**Q18A:** At this point, the most appropriate course of action is to?

- A. Hospitalize the patient and start treatment with 4 antitubercular drugs**
- B. Hospitalize the patient and start treatment with rifampin
- C. Prescribe INH for prophylaxis and send the patient home to await culture results
- D. Provide no drugs and send the patient home to await culture results

**Q19B:** Which drug regimen should be initiated in this patient when treatment is started?

- A. Amikacin, INH, pyrazinamide, streptomycin
- B. Ciprofloxacin, cycloserine, INH, PAS
- C. Ethambutol, INH, pyrazinamide, rifampin**
- D. INH, pyrazinamide, rifampin, ampicillin

**Q20C:** Which statement concerning the possible use of INH in this patient is false?

- A. Dyspnea, flushing, palpitations, and sweating may occur after ingestion of tyramine-containing foods
- B. In fast acetylators, lower maintenance doses are necessary**
- C. Peripheral neuritis may occur during treatment
- D. The patient should take pyridoxine daily

**Q21D:** On her release from the hospital, the patient is advised not to rely solely on oral contraceptives to prevent pregnancy because they may be less effective while she is being maintained on antimycobacterial drugs. The agent most likely to interfere with the action of oral contraceptives is?

- A. Amikacin
- B. Ethambutol
- C. Rifampin**
- D. INH

**Q22:** Arthur Morgan is later presented to the clinic with complaints of red urine and tears after being prescribed a medication by his doctor for treatment of his TB. Which medication might be most likely responsible for this?

- A. Rifampin**
- B. Isoniazid
- C. Pyrazinamide
- D. Ethambutol

**Q23:** A Qatari patient with T.B was on a trip to Qatar to watch his team lose. He was on a drug plan for his TB for 6 months. The patient suddenly while checking his urine found what he assumes is blood and while brushing his teeth, he recognized the same color. Which of the following could cause this adverse effect?

- A. Rifampin**
- B. Isoniazid
- C. Pyrazinamide
- D. Ethambutol

**Q24:** A 45 year old man with diabetes, diagnosed with pulmonary tuberculosis who started treatment two months ago presents to you with a weeks history of pins and needles in his hands and feet with associated numbness. He tells you that his symptoms started since he stopped taking the vitamins given to him at the start of his TB treatment. From the list below, which of the following is responsible for the symptoms described by the patient?

- A. DM
- B. Isoniazid**
- C. Ethambutol
- D. Streptomycin

**Q25:** A 23-year-old man was started on standard four-drug antimycobacterial therapy for treatment of active TB. He has epilepsy, which is controlled with carbamazepine. He has had no seizures in 5 years; however, upon return to clinic at 1 month, he reports having two seizures since his last visit. Which drug may be the reason his carbamazepine is less effective?

- A. Isoniazid
- B. Rifampin**
- C. Pyrazinamide
- D. Ethambutol

**Q26:** Which effect does rifampin have that's not in common with isoniazid?

- A. Hepatotoxicity
- B. Bacteriocidal action against TB
- C. Inducer of CYP-450 Enzymes**
- D. All of the above

**Q27:** A 10-year-old boy has uncomplicated pulmonary tuberculosis. After initial hospitalization, he is now being treated at home with INH, rifampin, and ethambutol. Which statement about this case is accurate?

- A. Baseline test of auditory function test is essential before drug treatment is initiated
- B. His mother, who takes care of him, does not need INH prophylaxis
- C. His 3-year-old sibling should receive INH (alone) prophylaxis**
- D. Polyarthralgia is a potential adverse effect of the drugs the boy is taking

**Q28:** Rapid acetylators under INH treatment are at risk of?

- A. Neurotoxicity
- B. Hemolytic Anemia
- C. Hepatotoxicity**
- D. Systemic Lupus

**Q29:** Which of the following anti-TB agent is bacteriostatic in their action?

- A. INH
- B. Rifampin
- C. Ethambutol**
- D. Pyrazinamide

**Q30:** Which anti-TB agent (now obsolete in leprosy due to resistance possibility) can theoretically be given in the treatment of leprosy?

- A. INH
- B. Rifampin**
- C. Ethambutol
- D. Pyrazinamide

**Q31:** Which side effect do isoniazid, rifampin, and Pyrazinamide all share in common?

- A. Hyperuricemia
- B. Systemic Lupus
- C. Red-orange fluid discoloration
- D. Hepatotoxicity**

**Q32:** What is the appropriate regimen for a pregnant patient with mild TB?

- A. INH and Streptomycin
- B. INH and Rifampin
- C. INH and Ethambutol**
- D. Ethambutol and Pyrazinamide

**Q33:** Which anti T-B agent can be given via IM injection and associated with oto-toxicity and nephro-toxicity?

- A. INH
- B. Streptomycin**
- C. Rifampin
- D. Ethambutol

