PICTURE QUIZ:
CPD IN INFECTIOUS DISEASES

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CASE HISTORY

A 28 year old male presents with a 6 week history of night sweats. He was born in India and had been resident in the UK for the past 6 years. He gave a history of a non-productive cough but no chest pain or breathlessness. He has been married for 3 years, is exclusively heterosexual and no other risk factors for HIV infection. On examination he was afebrile, pulse 95 bpm, BP 105/65, no lymphadenopathy, chest clear, abdominal examination unremarkable with no hepatosplenomeagly. Neurological examination was normal.

Figure 1

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Blood tests revealed a Hb of 10.8 g/dl, MCV 84, WBC 5.1 (neutrophils 3.8 lymphocytes 0.6), platelets 220. Urea, electrolytes and creatinine normal. Liver function tests; alanine transaminase 55 iu/ml, alkaline phosphatase 280 iu/ml (normal <120). Chest X ray is shown in figure 1.

1. What is the most likely diagnosis?
2. What is the differential diagnosis for this CXR appearance?
3. What other physical examination could you do to confirm this diagnosis?
4. Are any other diagnostic tests indicated?
5. What treatment is required?

ANSWERS TO PHOTOQUIZ

a. Legend to figure 1

The Chest X ray shows widespread miliary shadowing with fine – 1-2 mm nodules scattered evenly throughout both lung fields.

Figure 2
b. Legend to figure 2

This photograph of the fundi shows a TB granuloma in the choroid inferotemporal to the optic disc in the right eye. The left eye is normal.

1. The most likely cause in this clinical scenario is miliary tuberculosis (TB). This is suggested by the history of fever/sweats and weight loss coupled with the chest X-ray appearance in a patient from a high-risk group for TB exposure. Patients with miliary TB are often deceptively well early on in the course of the illness with few physical signs on examination. This patient has a tachycardia and relatively low blood pressure which should raise concern regarding severity of disease. The anaemia plus raised alkaline phosphatase and ALT suggest bone-marrow and liver involvement as well as pulmonary disease. Without treatment he has a very high risk of disease progression and death. He should be admitted for investigation and management.

2. The differential diagnosis of miliary chest X-ray shadowing is as follows. Infection: TB, histoplasmosis, schistosomiasis. Non-infective causes: sarcoidosis, miliary metastases eg from thyroid carcinoma.

3. Ophthalmological examination may reveal choroidal tubercules which in this clinical scenario will confirm the clinical diagnosis of miliary tuberculosis. Fundoscopy was performed for this patient and is shown in figure 2. Best results will be obtained with indirect fundoscopy by an experienced operator after pupil dilation with tropicamide but central lesions, as in this case, may be readily seen with a direct ophthalmoscope. 60% of patients with miliary TB have lesions such as these visible in the choroid.

4. Miliary tuberculosis is one of the most severe and life-threatening forms of the disease and treatment is urgent. Once the diagnosis has been suspected clinically it is essential that therapy is not delayed due to the risk of circulatory collapse with shock and rapid onset of organ failure or central nervous system involvement. It is, however, important to try and establish a microbiological diagnosis and obtain material for culture and sensitivity testing to aid later management. In miliary TB sputum is often difficult to obtain and may well be smear negative. Induced sputum obtained by nebulising hypertonic saline has a higher diagnostic yield. Bronchoscopy and bronchoalveolar lavage should be considered where available in a timely manner but treatment should not be delayed unduly whilst awaiting a slot for bronchoscopy. Bone marrow and liver are frequently involved in miliary TB and bone marrow biopsy plus culture...
has a high diagnostic yield. In miliary TB there is a high incidence of concurrent central nervous system involvement. Contrast enhanced CT scan should be performed at the onset of treatment to exclude intracerebral abscesses as this will alter therapy (see below). If CT is normal then lumbar puncture and CSF examination is only indicated where there are symptoms suggestive of meningeal involvement.

5. Drug treatment is urgent and should be commenced as soon as appropriate samples have been taken for culture. Standard 4 drug anti-TB therapy should commence with Rifampicin, isoniazid, pyrazinamide and ethambutol. Corticosteroids are indicated if there is evidence of central nervous system involvement or if the patient is hypotensive or has organ failure. The optimal duration of corticosteroid treatment has not been defined. UK guidance from the National Institute for Health and Clinical Excellence (NICE) recommends ‘- adults – equivalent to prednisolone 20–40 mg if on rifampicin, otherwise 10–20 mg – children – equivalent to prednisolone 1–2 mg/kg, maximum 40 mg’ (NICE guidance CG33 2006). However, in current practice many patients receive a higher initial dose of prednisolone tailed off over a longer period of time in relation to clinical response. Anti-tuberculous treatment should be modified after 8 weeks when culture and sensitivity data are available. If the isolate is fully sensitive then treatment is rationalised to isoniazid plus rifampicin and continued to a total of 6 months for uncomplicated miliary TB. If there is CNS involvement then 12 months total duration is required. In drug resistant cases the regimen and duration of therapy require specialist advice. All patients should be monitored carefully during treatment to ensure compliance and completion of therapy. Finally all cases of suspected or proven TB require notification to public health and contact tracing.

This patient had a normal CT brain scan with contrast. Induced sputum was smear negative but subsequently culture positive for *Mycobacterium tuberculosis* fully sensitive to all anti-TB drugs. He was started on quadruple TB therapy with prednisolone 60 mg/day. Prednisolone was tailed off over the next 6 weeks and at week 8 he was changed to rifampicin plus isoniazid continued for a further 16 weeks. Compliance was excellent and he made a full recovery.

**FURTHER READING**