Delayed Diagnosis

Rigors in tuberculosis

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Summary: Rigors are not a recognized characteristic of miliary tuberculosis. We report two patients presenting with persistent rigors, thought to be suggestive of acute pyogenic infection, who were subsequently found to have miliary tuberculosis. In both cases, there was significant diagnostic delay. Miliary tuberculosis should therefore be included in the differential diagnosis of any patient presenting with unexplained rigors.

Introduction

Tuberculosis should always be considered in cases of prolonged fever, especially as this may be the only clue to the diagnosis in generalized tuberculosis. We report two cases of miliary tuberculosis in whom rigors were a prominent presenting feature, which led to diagnostic confusion.

Case reports

Patient 1

A 62 year old Greek woman was first seen in the accident and emergency department with a week's history of fevers, shivering, generalized abdominal pain, myalgia and dysuria. Although a urine specimen contained only scanty pus cells and was sterile on culture, she was treated for presumed pyelonephritis with oral co-amoxiclav. Her condition deteriorated and 3 days later she was admitted with a temperature of 40°C. During her admission, she was noted to have a swinging pyrexia and rigors were observed. A diagnosis of probable Gram-negative septicaemia secondary to intra-abdominal pathology was made.

Investigations showed haemoglobin 10.7 g/dl, white cell count $8.6 \times 10^9/l$ (normal differential), serum albumin 32 g/l (normal 41–51 g/l) and alanine transaminase 202 IU/l (normal <45). The following day a chest X-ray showed widespread miliary shadowing. Lumbar puncture yielded a clear cerebrospinal fluid with no cells, normal protein and glucose. Blood cultures were negative. No acid fast bacilli were detected in smears of sputum, bronchial washings or early morning urine

specimens but *Mycobacterium tuberculosis* was grown in scanty amounts from respiratory and urinary specimens though not from the cerebrospinal fluid. She responded rapidly to anti-tuberculous therapy.

Patient 2

A 56 year old Jamaican woman presented with week's history of headache, fevers, chills, nausea and vomiting. She had become confused and drowsy in the 24 hours before admission, with marked neck stiffness but no photophobia, and was thought to have possible meningitis.

Her temperature was 39.5°C and frequent rigors were observed. Initial investigations showed haemoglobin 9.7 g/dl (sickle cell trait positive), white cell count $3.3 \times 10^6/l$, sedimentation rate 53 mm/hour and alkaline phosphatase 23 (normal 2–11 kAu). A chest X-ray raised the possibility of miliary mottling and a lumbar puncture was performed. The cerebrospinal fluid contained two white cells, the protein was minimally elevated (0.8 g/l) and the glucose was 2.5 mmol/l (blood glucose 5.8 mmol/l). No acid fast bacilli were detected on auramine-stained smears of the cerebrospinal fluid or early morning urines.

On the basis of the chest X-ray anti-tuberculous chemotherapy was started, initially intravenously. A repeat chest X-ray 5 days later demonstrated unequivocal miliary shadowing. *M. tuberculosis* was later isolated in scanty amount from the cerebrospinal fluids, though not from urine or bone marrow. Her temperature failed to settle and she developed back pain with destruction of the second lumbar vertebral body, disc space narrowing and some early erosion of L3. Fever and rigors persisted

for 3 weeks on anti-tuberculous treatment before finally settling.

Discussion

Rigors (generally described by patients as chills, shaking or shivering attacks) represent an extreme form of generalized muscular contraction and result from an attempt to raise body core temperature following resetting in the hypothalamic centre.¹ The usual cause is the release of bacteria or malarial parasites into the circulation, although viral infection and malignant disease, such as lymphoma may occasionally be responsible. Tuberculosis is not generally recognized to be a cause. Fever was reported to occur in 75–85% of 209 patients with miliary tuberculosis from several large studies.^{2–4} Despite analysis of the characteristics of fever, no mention was made in any of these reviews of rigors. This may have led to the common view that rigors do not occur in tuberculosis. However, it is clear from much earlier literature on phthisis, by Louis,⁵ that rigors were a feature of acute disease. Referring to 13 cases of acute phthisis he wrote; 'these tuberculous individuals were seized, while in the enjoyment of excellent health, with rigors and trembling more or less violent, which recurred the following days'.

Recognition that rigors may be a presenting feature of miliary tuberculosis and that the patient may have only been unwell for as little as a week may prevent diagnostic delay, especially in adult

patients. Neither of our cases had respiratory symptoms and in both, the chest X-ray was delayed, yet was diagnostic. Urinary symptoms were a prominent feature in case 1 and five of the 40 cases reported by Proudfoot *et al.*⁴ had urinary symptoms, three of them were subsequently found to have renal tract tuberculosis.

Early confirmation of the diagnosis can be difficult but should not cause delay in treatment. Sputum and urines are easily examined but may be smear negative even if *M. tuberculosis* is later isolated. Bronchial lavage may be worth attempting where sputum is acid fast bacilli negative but invasive specimens such as bone marrow, liver biopsy or cerebrospinal fluid are unlikely to be smear positive. A reliable rapid diagnostic test for for such cases is sorely needed.

Whereas the best guess blind treatment of patients with rigors from infection with bacteria other than *M. tuberculosis* with broad spectrum antibiotics is likely to be appropriate, the treatment of tuberculosis requires very specific agents that do not usually form part of a bacteraemic cocktail. It is crucial therefore to think of the diagnosis in the presence of rigors and recognize that early laboratory confirmation may be difficult.

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