

# Case 10 - Fever: Student Handout

## Part 1, History:

Mrs. Fatima A. is a 45-year lady presenting to the ER with a chief complaint of: fever for the past month.

**History of presenting illness:** she has been doing well till three months ago when she started feeling generally unwell. She has been having increasing fatigability and malaise, till she was unable to do her normal daily activities. Over the past month she started having fever that she measured to be between 38<sup>0</sup> to 38.5<sup>0</sup> which she gets on a nightly basis. The fever is associated with drenching night sweats that make her change the bed linen in the middle of the night. Over the same period of time, she has had a dramatic reduction in her appetite, and has lost more than 12kg over the past 3 months. She has no cough, no shortness of breath, no haemoptysis, no dysuria, and no diarrhea. Over the past month she had sought out medical attention multiple times and was treated with different antibiotics and antipyretics with partial response of her fever, but it would return soon after she had stopped her medications.

### **Family history**

Her grandfather was diagnosed with pulmonary TB 8 years ago. Her parents both have DM. Her sister has hypothyroidism. No known malignancies.

### **Past medical history**

She was diagnosed two years ago with type 2 diabetes mellitus. It is well controlled with diet alone with no known complications. At the time of her fathers' diagnosis with TB a tuberculin skin test (TST) was done and was positive, it showed an induration above 15mm, she was offered preventive therapy at the time but declined because she believed she was immune as she had BCG vaccination as a child.

### **Allergies**

No known drug allergies.

### **Medications**

She has been continuously on an oral contraceptive pill for the past 10 years.

### **Travel history**

She travelled to Jizan 6 months ago to visit friends and family.

### **Social history**

She is a college teacher, married with two healthy children. She has a good socioeconomic income, living in a large villa. No animal contact and no raw milk products were consumed in the past.

## **Part 2, clinical examination:**

Mrs. Fatima A. is a middle-aged lady she looks cachexic and unwell with a BMI of 16. On examination she looked pale.

Her vital signs are summarized in the table below:

<b>Vital signs</b>	<b>Fatima</b>	<b>Normal range</b>
Pulse rate	100 regular	60-100/min
Blood pressure	120/80 mmHg	100/60-120/80 mmHg
Temperature	38.3 °C	36.6-37.2 °C
Respiratory rate	14	12-16/min

**Cardiovascular System:** Normal JVP. Normal S1 and S2. No murmurs nor pericardial rub.

**Respiratory System:** Normal bilateral vesicular breathing. No crackles nor wheezing.

### Abdominal Examination:

Soft and non-tender. Edge of liver was palpable 2cm below the costal margin. The liver span was measured to be 14cm. Her spleen was not palpable, however castell's sign was positive.

### Lymphnodes Examination:

Bilateral, deep, and mottled anterior cervical lymphnodes which were soft and non-tender. Bilateral axillary lymph nodes that were also non tender and soft. Multiple bilateral large inguinal lymphnodes as big as 3 cm in size, mobile and non-tender.

### Part 3, Investigations:

The results of her investigations are summarised in the tables below:

#### Complete Blood Count (CBC)

Blood Test	Fatima	Normal range
Haemoglobin	9.5 g/100ml	11.5-15.5 g/100ml
White blood cell count	3,600 mm <sup>3</sup>	4,000 -10,000 mm <sup>3</sup>
PCV	42 %	37-47%
MCV	86 fl	80-96 fl
MCHC	323 g/L	300-350 g/L
Platelet count	114,000 mm <sup>3</sup>	145,000-450,000 mm <sup>3</sup>
ESR	105 mm/hr	Women under 50 years old: less than 20 mm/hr

**Urine and blood cultures:** both had no growth

☐ **Liver Function Test:**

Test	Fatima	Normal Range
ALP	80	35-104 U/L
Bilirubin	12	5-21 µmol/L
ALT	110	0-55 U/L
AST	95	0-32 U/L
Albumin	29	34-48 g/L

☐ **Urea and Electrolytes**

Test	Fatima	Normal range
Serum Sodium	139	135-145 mmol/L
Serum Potassium	4.0	3.5-5.0 mmol/L
Blood Urea	3.0	2.5-8.3 mmol/L
Blood creatinine	0.09	0.05-0.11mmol/L
Blood Glucose	5.0	3.6-5.3 mmol/L

**Hemoglobin A1c**

Test	Fatima	Normal range
Hb A1c %	6.5%	< 6.0%

**Chest X-ray:** Bilateral hilar adenopathy. No consolidation, no air space disease ,no cavitary lesions.

**Quantiferon-TB Gold test:** positive, TST 15 mm.

## **Follow-up of the case**

Fatima was admitted to the hospital as case of pyrexia of unknown origin (PUO) and an inguinal lymph node biopsy as well as a bone marrow aspiration and biopsy all showed a positive AFB smear and PCR for TB, 3 weeks later culture grew *mycobacterium tuberculosis* and a diagnosis of (EXTRA-pulmonary) disseminated tuberculosis was established.

Her OCP was stopped and was started on INH, rifampin, pyrazinamide and ethambutol, one week later her fever subsided, and her appetite improved, she was discharged home with 2 weeks follow up in the infectious disease clinic.

### **Learning objectives of the case:**

By the end of the case the student should be able to:

1. Define pyrexia of unknown origin.
2. Enlist the different causes of fever and discuss in detail the common sources of PUO
3. Identify the causes of fever in this patient under most likely & less likely categories.
4. Identify importance of travel, social and family histories in such cases
5. Justify abnormal findings in the history and clinical examination.
6. Define the importance of an intensive diagnostic evaluation for patients with PUO to diagnose the underlying disease
7. Discuss the importance of daily physical examination for patients with PUO
8. Highlight the "red flag" indicators in such a patient.
9. Discuss the association of excessive exposure to immunosuppressive drugs (Paracetamol/NSAIDs/ Cyclooxygenase COX) and PUO.
10. Discuss the drug-drug interactions that her OCP may potentially have had if not stopped.
11. Discuss different adverse events of anti-TB medications and how to manage them

12. Discuss the importance of her previous positive TST and her decision not to receive prophylactic therapy due to BCG vaccination.

**Instruction to the students:**

Please read the case carefully, individually or in the group before you are coming to the “Case based learning” session. Look at the objectives and try to fulfill these objectives. Prepare for the case well by referring to some suggested reading list. The tutor in CBL session will ask you to go through the case and answer some of his stimulating questions to ensure that you have achieved the objectives

**Suggested Reading:**

- Uptodate Approach to the adult with fever of unknown origin
- Mandell, Douglas, and Barnett’s Principles and Practice of Infectious Diseases

**Important Information to students:**

- The students are expected to read the case and related question carefully, before they come case-based discussion session.
- Every student must bring the following book to the session:  
Clinical methods by McLeod