Clinical Scenario – 1

Expected answers are included (in red) to give an indication of the length of responses required

An 18 year old female who had recently enrolled in an undergraduate degree course at the local University developed a sore throat and white patches on her tonsils. She attended the University GP surgery and was diagnosed with a viral infection and advised to take paracetamol and use throat gargles. When she was no better in a few days she went home to her parents. Over the week she became increasingly tired and unwell with myalgia, malaise and fever. Her local GP felt she may be suffering from the "flu". A recent briefing from Public Health authorities had informed GPs that Influenza A(H1N1) , influenza A(H3N2) and influenza B viruses were currently circulating in the community. The GP prescribed bed rest, paracetamol and oseltamivir.

At about 12 days after her initial illness the patient developed a high fever, severe pain in the throat, pain on the side of the neck and a constant dull pain in the abdomen. The GP made a home visit and called an ambulance to take her to hospital. At the Emergency Department the junior doctor noted the history and examined the patient's throat, ears, chest and abdomen. He noted swollen erythematous tonsils and painful, swollen lymph nodes in the neck. The rest of the respiratory system was normal. The abdominal pain was thought to be related to constipation. She was given a course of amoxicillin and discharged home.

Later that night the patient deteriorated significantly, she developed a very high fever with shivers; she complained of increasing abdominal pain and she was confused and unable to walk. She returned to the Emergency Department. On assessment she had a temperature of 40^0C, heart rate of 115/minute, respiration of 25/minute, oxygen saturations of 95% in air, BP 100/60. Urine dipstick analysis showed ketones 3+ and nitrites 1+. Routine blood test results for full blood count and CRP are presented below. Two sets of blood cultures were sent to the laboratory, respiratory swabs for viral PCR and a throat swab for culture were also taken.

TEST	RESULT	UNITS	REFERENCE RANGE
C-Reactive Protein	212	mg/L	0 – 10
White Cell Count	22.1	X 10^9/L	4 – 11
Neutrophils	18.3	X 10^9/L	1.7 – 8.0

On examination of the throat she had ulcerative tonsillitis and lymphadenopathy, chest X-ray showed bilateral basal consolidation. The impression was that the patient had developed a post-viral secondary bacterial tonsillitis and pneumonia. You are asked to provide antibiotic advice. The patient is not allergic to penicillin.

The antibiotic policy of the hospital suggests treatment with amoxicillin and clarithromycin for community acquired pneumonia and oral penicillin for tonsillitis.

1. Please state <u>your</u> recommended antibiotic regimen for a post-viral secondary bacterial pneumonia [DO NOT provide any other information; unsolicited answers will not be marked]
    a. Antibiotic/s -
    b. Dose and route
    c. Duration

A combination that covers *S pneumoniae* and *S aureus*

- Benzyl penicillin 1.2 g IV QDS+ Flucloxacillin 1gIV or Amoxicillin 1g IV QDS + Flucloxacillin 1gIV

OR

- Coamoxiclav 1.2 g IV TDS

OR

- Ceftriaxone 1g IV OD

Duration: 2 weeks for pneumonia

Review at the end of one week, IV to oral switch if significantly clinically better

- 48 hours later the patient developed respiratory distress and could not maintain her oxygen saturations – she was transferred to ICU. She was on non-invasive ventilation; she also had central venous vascular access and an arterial line. Chest CT showed cavitating lesions in both lung fields suggestive of abscess formation. Blood cultures showed evidence of Gram negative bacilli in the anaerobic bottle.

- After an initial transient improvement on the above chosen antibiotic therapy she suffered a recurrence of fever with spiking temperatures up to 39^{o}C and an upward trend in CRP. She complained of increasing abdominal and hip pain and continuing pain in her throat and neck.

- She underwent a CT scan of her chest, abdomen and pelvis with contrast which showed

    - Pleural effusion with multiple lung abscesses
    - Collection in the right hip joint with gas in the femoral medullary cavity

- Having noted the blood culture result of a possible but unconfirmed bacteroides and in light of the continuing deterioration despite broad spectrum antibiotics and surgical washout of the hip joint, the Microbiologist requested an ultrasound investigation of the major vessels for development of clots.

- Report of Ultrasound neck: lumen of the left internal jugular vein progressively narrowed by mural thrombus, until it is completely occluded at the level of the thyroid gland. It is pitted below this just prior to the confluence with the left subclavian vein.
- Later a total body MRI report confirmed: left internal jugular vein thrombus, left pleural effusion with multiple bilateral lung abscesses, extensive infective changes in left hip, osteomyelitis left proximal femur, two adductor muscle abscesses close to symphysis pubis

2. You are the microbiologist consulting on this case.
    a. What is the likely identity of the anaerobic Gram negative bacillus in blood culture

    Genus and species

    Fusobacterium necrophorum

    b. What is your diagnosis

    Lemierre's Disease

    c. Name three clinical characteristics in support of your diagnosis

    Ulcerative tonsillitis
    Internal jugular vein thrombosis
    Metastatic abscesses

d. What is a common prodromal illness that precedes this condition

Epstein Barr virus upper respiratory tract infection

Or

Viral upper respiratory tract infection

e. In one sentence explain the likely sequence of events leading to this clinical presentation from the initial throat infection

F necrophorum in ulcerative tonsillitis causes thrombophlebitis in tonsillar veins, leads to thrombophlebitis and thrombus formation in internal jugular vein; septicaemia results in metastatic abscesses.

Unifies key events - ulcerative tonsillitis » thrombophlebitis of tonsillar veins » IJV thrombus » bacteraemia» metastatic abscesses

f. What is the antibiotic of choice for this organism – name one first-line antibiotic only

Metronidazole