



Module 4 e-learning case 1
Acute oncology

Case Study 1

■ History :

- A 72 year old gentleman presented with epigastric pain, anorexia and weight loss.
- Clinical examination revealed fullness in the epigastrium
- His overall performance status was judged as 1 on WHO score

Case Study 1

■ History :

- What would be your top three entries on your differential diagnosis if he came in via acute medical take?
- What investigations would you perform?
- What does WHO performance status 1 mean?

Case Study 1

■ History :

- What would be your top three entries on your differential diagnosis if he came in via acute medical take?
Upper GI malignancy, Gastric / duodenal ulcer
- What investigations would you perform?
FBC, EC, LFTs, CT upper abdomen and OGD
- What does WHO performance status 1 mean?
Restricted in daily activity, but still ambulatory.
Capable of light work.

CT Scan :

- 8cm mass in the tail of the pancreas .
- Multiple enlarged lymph nodes up to 10mm in size .
- Liver lesions consistent with metastases. Lungs clear.



- What would you do next?

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- What would you do next? **USS guided biopsy of pancreatic mass**

US Guided Liver Biopsy

- metastatic poorly differentiated adenocarcinoma.
- Immunohistochemistry , confirmed pancreatic origin and suggests adenosquamous differentiation.
- Tumour is CK7 positive and CK20 positive
- What does this mean?

CK7 and 20

- Cytokeratins – cell surface protein expressed on epithelial surface of tumour cells
- Suggest carcinoma rather than mesenchymal tumour
- Can give clues as to where an adenocarcinoma has come from

Immunophenotype	Tumor
CK7 ⁺ /CK20 ⁺	Cholangiocarcinoma/biliary duct carcinoma ^a
	Gastric adenocarcinoma ^a
	Ovarian mucinous carcinoma
	Pancreatic adenocarcinoma
	Transitional cell carcinoma
CK7 ⁺ /CK20 ⁻	Ductal and lobular breast carcinoma
	Malignant mesothelioma
	Endometrial adenocarcinoma
	Ovarian serous and endometrioid carcinoma
CK7 ⁻ /CK20 ⁺	Pulmonary adenocarcinoma/bronchioalveolar carcinoma
	Colorectal adenocarcinoma
	Gastric adenocarcinoma ^a
CK7 ⁻ /CK20 ⁻	Merkel cell carcinoma
	Hepatocellular carcinoma
	Prostatic adenocarcinoma
	Renal cell carcinoma
	Small cell carcinoma of lung
	Squamous cell carcinoma of esophagus, lung, skin
	Thyroid carcinoma (follicular and papillary)

Staging

- Can you stage this disease?

Table. TNM Classification for Pancreatic Cancer ([Open Table in a new window](#))

Primary tumor (T)	
TX	Primary tumor cannot be assessed
T0	No evidence of primary tumor
Tis	Carcinoma in situ
T1	Tumor limited to the pancreas, ≤ 2 cm in greatest dimension
T2	Tumor limited to the pancreas, > 2 cm in greatest dimension
T3	Tumor extends beyond the pancreas but without involvement of the celiac axis or the superior mesenteric artery
T4	Tumor involves the celiac axis or the superior mesenteric artery (unresectable primary tumor)
Regional lymph nodes (N)	
NX	Regional lymph nodes cannot be assessed
N0	No regional lymph node metastasis
N1	Regional lymph node metastasis
Distant metastasis (M)	
M0	No distant metastasis
M1	Distant metastasis

Staging

- Can you stage this disease?
- Radiological stage T2N1M1

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Treatment

- Advanced pancreatic cancer which is not curable.
- Palliative Chemotherapy : is aimed at improving symptoms, maintaining quality of life and extend life.
- Combination chemotherapy with gemcitabine and abraxane*

* Albumin bound Paclitaxel nanoparticles for Advanced adenocarcinoma of the pancreas

Therapeutic nanotechnology

- Enhance solubility of drugs
- Can carry multiple 'cargo' compounds
- Drug targeting

Learn more in this [YouTube clip](#)

Abraxane and NICE guidance

- Abraxane costs £1500 per cycle.
- Abraxane + Gemcitabine yields 2.1 month overall survival benefit over Gemcitabine alone
- BUT adding Abraxane to Gem increases toxicity

- NICE calculated cost per QALY at £51,900
- NICE normally fund a drug if cost per QALY <£30,000

Admitted Day 2 post Cycle 1 chemo

- Woke up , epigastric pain .
- Checked temp 38.1-38.6
- Denies rigors and chills
- No cough
- No frequency or dysuria
- Constant nausea
- O/E:
 - Appears dehydrated
 - Chest clear
 - Abd soft, mass in epigastrium, non tender
 - CVS: NAD

Working diagnosis

- What is your differential?

Neutropaenic sepsis

Non-neutropaenic sepsis

- How would you manage the patient?

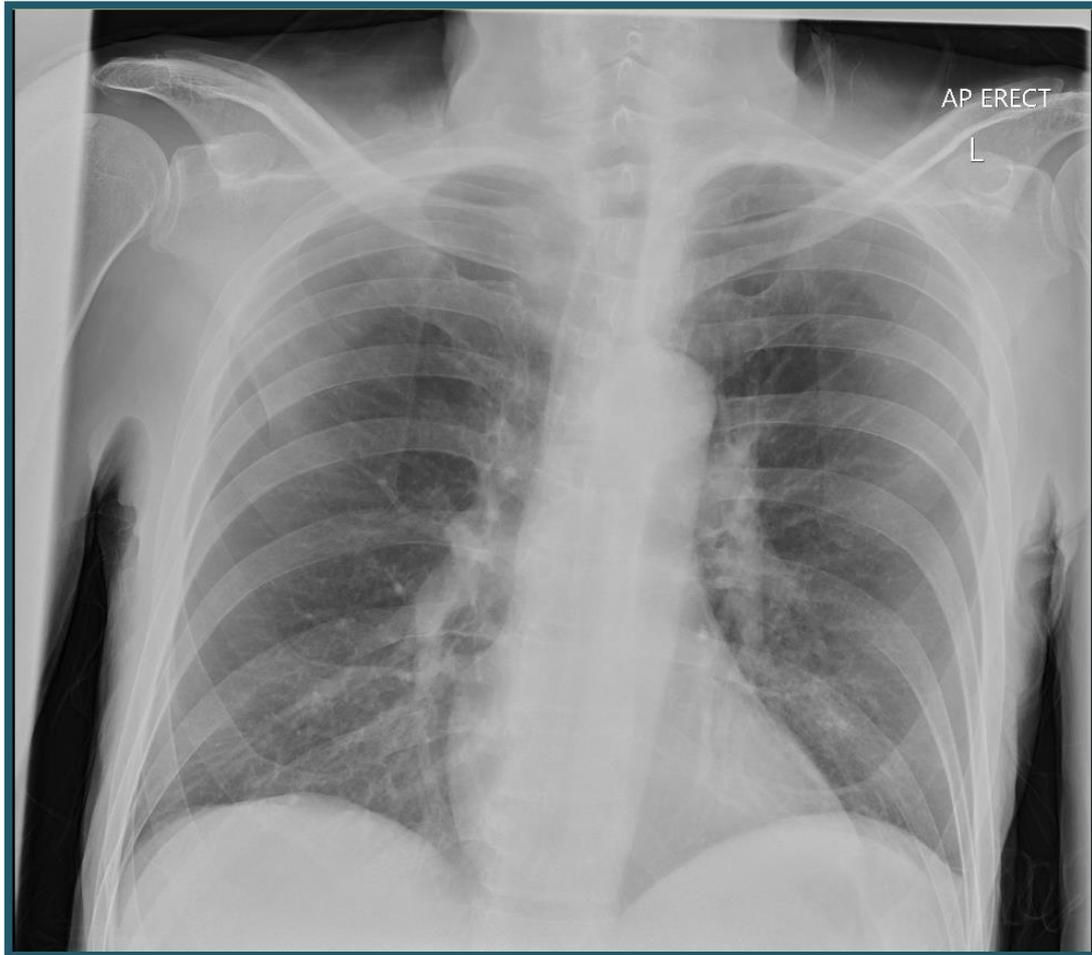
Manage as neutropaenic sepsis, even though it is unlikely to be the case just 2 days post chemo

Plan of Treatment

- Bloods . (WBC 24.4, CRP 114)
- IV Antibiotics as per trust guidelines .
- Septic screen .
- IV fluids .

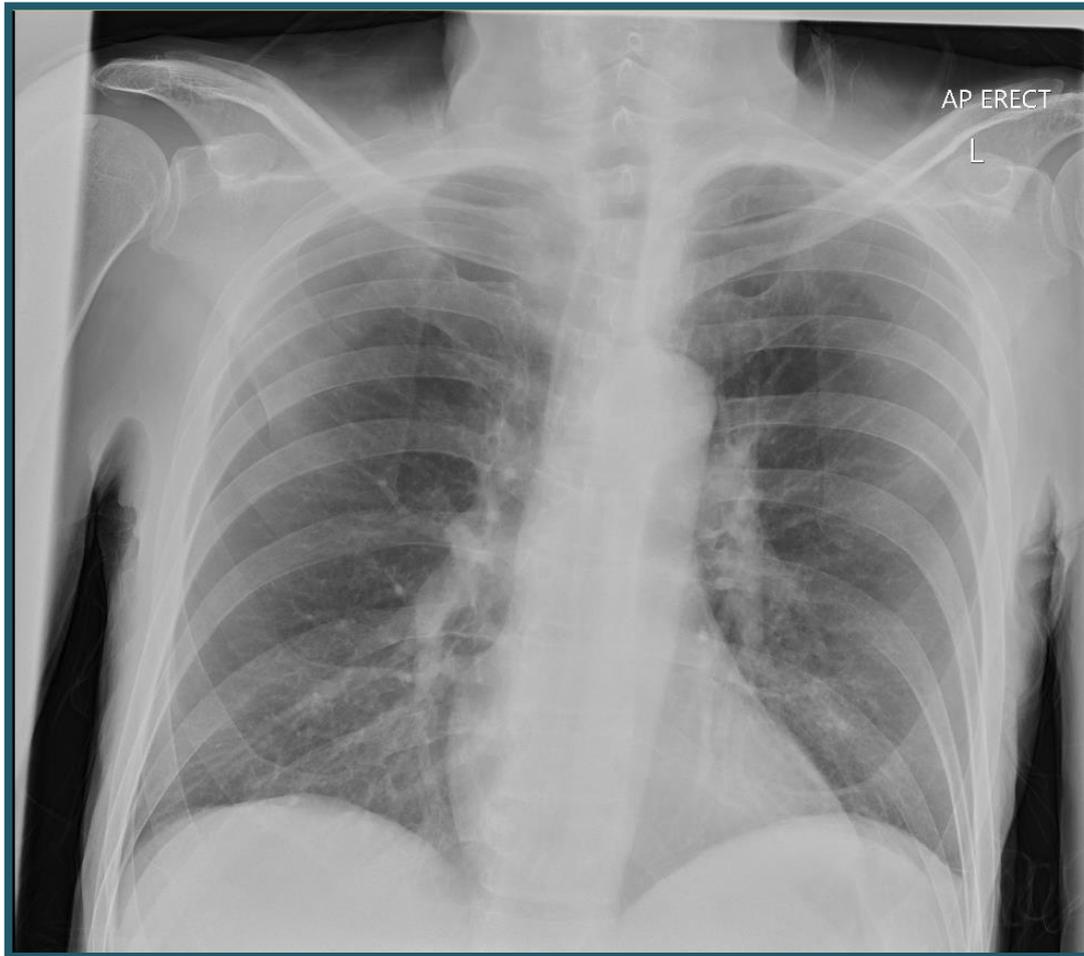
Septic Screen

- Comment on the chest radiograph



Septic Screen

- Comment on the chest radiograph – **it's normal!**



Clinical course

- 4 days of I/V ABx
- WBC dropping
- Temperature still spiking
- What would you do next?

Clinical course

- 4 days of I/V ABx
- WBC dropping
- Temperature still spiking
- What would you do next?

Remove any lines

Reculture everything

Talk to microbiology

Switch antibiotics

Progression

- WBC normalised after 1 week.
- All cultures clear, CRP remains 104



What is going on?

- Persistent fever, no source after 7 days in hospital
= Pyrexia of Unknown Origin (PUO)
- What else would you consider?

What is going on?

- Persistent fever, no source after 7 days in hospital
- What else would you consider?

Dental assessment – hidden abscess

Echo - endocarditis

White cell scan – occult sepsis

Procalcitonin - disease related fever

Disease related fever

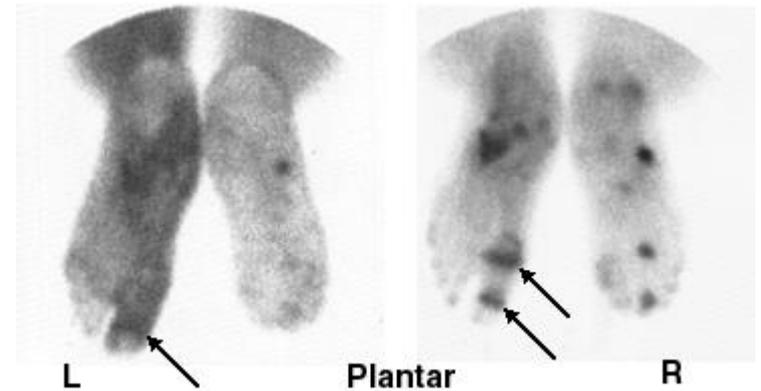
- Fever can be due to local disease (esp Hodgkin lymphoma) or metastatic disease (esp renal cell carcinoma)
- Fever can also be response to therapy
- Can also see elevated peripheral white cells counts and neutrophilia
- Diagnosis of exclusion
- Steroids often helpful to control symptoms
- Procalcitonin level said to more helpful than CRP – elevated in infection rather than tumour related fever

Procalcitonin (ProCT)

- Calcitonin precursor, produced normally by thyroid gland
- ProCT secreted by white cells within 2-3 hours of the onset of a bacterial infection
- ProCT not elevated in non infectious inflammatory conditions unless very severe
- Peaks within 12-24 hours, half life of 24-35 hours.

Indium -111 White cell scan

- Used to identify occult inflammation or infection
- White cells drawn off by venepuncture, labelled with Indium and injected into patient
- White cells (and tracer) will get sequestered at site of infection
- Image patient with a Gamma camera (In-111 is a weak gamma emitter)



Acute osteomyelitis in the feet visualised with white cell scanning in a patient with PUO

Discharge

- Sent home
- Plan was to start steroids if fever started again
- Discharge information:
 - Advised to phone acute oncology service helpline in case of any new symptoms (cough, diarrhoea, difficulty passing urine, etc
- Always offer a 'helpline' if a patient's treatment is rapidly de-escalated and they are then discharged home

Learning points

- Pancreatic cancer often presents in late stage or metastatic disease
- Neutropaenic sepsis must always be considered for an unwell patient on chemotherapy, even if the probability is quite low
- There are several reasons why a cancer patient can get fever, but disease related fever is essentially a diagnosis of exclusion