



FRANZCR Examination

Phase 2 Radiation Oncology

Pathology

February 2018

Time Allowed: 3 Hours

INSTRUCTIONS

ALL QUESTIONS are to be attempted.

There are a total of SIX (6) questions.

All questions are of equal value.

The marks allocated to each sub-part of the questions are indicated in brackets.

Hand **all** papers to the invigilator.

No papers are allowed to be taken from the examination room.

THIS INCLUDES THE QUESTION PAPERS.

Question 1

A 45 year old presents with a rubbery neck mass.

- a.** Describe the methods of obtaining a biopsy and the advantages and disadvantages of each. **(2)**

Biopsy confirms follicular lymphoma.

- b.** Describe the histopathology, grading, immunohistochemistry and cytogenetics of follicular lymphoma. **(4)**

- c.** What factors are used in the international prognostic index (IPI) for follicular lymphoma? **(2)**

How is the IPI scoring done and what is the prognosis based on that?

- d.** What clinical features would indicate a transformation to a diffuse large B cell lymphoma? **(2)**

What is the name given to this transformation?

What is its prognostic significance?

Question 2

- a.** Compare pituitary tumours arising from somatotrophs and corticotrophs in regard to:
- i** Clinical Features **(1.5)**
 - ii** Laboratory Findings and; **(1)**
 - iii** Pathologic Findings **(1.5)**
- b.** List tumours that arise in the sellar region **(1.5)**
- c.** What is the pituitary “stalk effect”? **(1)**
- d.** Describe the current WHO classification of Meningiomas. **(3.5)**

Question 3

- a.** With regards to Barrett's oesophagus, describe the:
- i** Macroscopic and microscopic appearance. **(1)**
 - ii** Pathogenesis and clinical significance. **(2)**
- b.** For adenocarcinoma and squamous cell carcinoma of the oesophagus, discuss the following:
- i** Epidemiology. **(2)**
 - ii** Risk factors. **(3)**
 - iii** Microscopic appearances and immunostaining profile. **(2)**

Question 4

A 50-year-old lady presents with a mass in the superficial lobe of the right Parotid gland.

a. List the clinical features which may suggest that this lesion is malignant in nature. **(1)**

b. Describe:

i the epidemiology.

ii biological behaviour.

iii Microscopic features.

For each of the following tumours:

• Pleomorphic adenoma **(3)**

• Mucoepidermoid carcinoma **(3)**

• Adenoid cystic carcinoma **(3)**

Question 5

A 60-year-old female undergoes a left mastectomy and axillary dissection for a 70mm grade 3 infiltrating ductal carcinoma, ER and PR negative and HER2 positive. 12 of 18 axillary lymph nodes involved.

- a.** List the cardiac complications that could occur following radiation therapy and the factors that may increase or reduce the risk of these cardiac complications. **(2)**

- b.** What is the pathogenesis of these cardiac complications following radiation therapy? **(4)**

- c.** Describe the pathogenesis of osteoradionecrosis. **(4)**

Question 6

A 65 year old presents with post-menopausal bleeding. A pelvic ultrasound demonstrates an enlarged uterus with endometrial thickening.

a.

- i** What are the differential diagnoses? **(1)**
- ii** Compare and contrast the risk factors and biological behaviour for Type 1 and Type 2 endometrial carcinoma? **(3)**

The patient undergoes TAHBSO.

- b.** What features of the pathology report would guide adjuvant therapy? **(2)**
- c.** Describe the FIGO histological grading system for endometrioid adenocarcinoma. **(2)**
- d.** **(2)**
 - i** What is Lynch syndrome?
 - ii** How do you test for it in a hysterectomy specimen?
 - iii** List the malignancies associated with Lynch syndrome.



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Clinical Oncology

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Question 1

A 52-year-old man presents with progressive lower urinary tract symptoms and a PSA of 44 ug/L. He has Gleason 5+5=10 (ISUP grade V) prostate cancer on biopsy. Staging reveals extensive asymptomatic bone metastases.

- a.** Describe a suitable management plan for this man. **(4)**
Justify your answer.
- b.** Discuss the potential toxicities associated with androgen deprivation therapy and the strategies that can be used to combat them. **(4)**
- c.** Describe two current investigational treatment approaches for metastatic castrate resistant prostate cancer and their mechanism of action. **(2)**

Question 2

A well, 25 year old woman is incidentally found to have a 1.5cm Arterio-Venous Malformation (AVM) in non-eloquent, occipital lobe of the brain.

- a. What would you explain to her about the natural history and risks of AVMs? **(2)**

- b. In general, what are the management options available for AVMs? **(4)**
Include in your answer the advantages and disadvantages of each option.

- c. With regard to acoustic neuromas:
 - i In general, what are the management options for acoustic neuroma? **(1)**

 - ii Outline the factors that are taken into account when deciding on the best management for an individual patient with an acoustic neuroma. **(3)**
Include in your answer the reason why the factor is important.

Question 3

- a. With regard to pregnancy and cancer:
- i What is the definition of pregnancy related cancer? (1)
 - ii What are the goals of managing a pregnant patient with cancer? (2)
- b. In general when **staging** a pregnant patient with cancer, list investigations which would be considered safe and those to be avoided. (2)
- Give reasons for your answer.
- c. What are the general principles for the use of radiation treatment in a pregnant patient with cancer? (3)
- Justify your answer.
- d. What are the general principles for the use of systemic therapies in a pregnant patient with cancer? (2)
- Justify your answer.

Question 4

A 60-year-old female with a history of locally advanced endometrial cancer presents with vomiting and constipation.

a. What are the likely causes of vomiting and constipation in this patient? **(3)**

b. How would you manage this patient initially? **(3)**

Include what investigations you would order.

Justify your answer.

Imaging confirms a small bowel obstruction from peritoneal disease. It is decided to manage this patient medically.

c. Describe your management plan including the medications you would prescribe. **(2)**

d. In general, discuss the role of surgery or other invasive procedures in malignant bowel obstruction due to advanced gynaecological cancer. **(2)**

Question 5

The CHhip trial (comparing standard fractionation with hypofractionation in prostate cancer) used a non- Inferiority trial design.

a. Provide an overview of non-inferiority trial design.

Include in your answer:

- i** The basic premise of non-inferiority trial design. **(1)**
- ii** The major components/features of non-inferiority trial design. **(2)**
- iii** The factors that need to be considered when undertaking a critical appraisal of a non-inferiority trial. **(2)**

Observational population based studies are being increasingly used to compare cancer treatment modalities.

b. Provide an overview of observational population based studies.

Include in your answer:

- i** The basic premise of observational population based studies. **(1)**
- ii** The strengths and limitations of observational population based studies. **(4)**

Question 6

There is increasing recognition that outcomes for adolescent and young adult (AYA) patients with cancer are not optimal.

- a.** Discuss possible reasons for the relatively poor outcomes. **(10)**

Include in your answer ways in which these obstacles may be overcome.



FRANZCR Examination

Phase 2 Radiation Oncology

Radiation Therapy 1

February 2018

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Question 1

A 56 year old woman presents with a two week history of haemoptysis and shortness of breath. A CT scan of the chest shows a 3cm right middle lobe mass with one enlarged 3cm ipsilateral mediastinal node.

- a. How would you evaluate this patient? (3)

Justify your answer.

- b. **In general**, what is the role of surgery in the curative management of patients with stage 3a (N2) disease. (4)

Include in your answer indications and contraindications.

Justify your answer.

The patient is fit. Investigations have revealed a squamous cell carcinoma of the right middle lobe with pathological involvement of **two** mediastinal nodes. A decision has been made to treat this patient with **radical chemo-radiation therapy**. (Surgery is not planned).

- c. Describe a suitable radiation therapy technique and dose fractionation schedule. (3)

Question 2

A 46 year old female presents with a biopsy confirmed 5cm squamous cell carcinoma arising from the vulva.

- a.** What factors need to be considered when deciding on her management? **(3)**

Justify your answer.

Staging confirms a fixed 5cm right inguinal node and no other disease. A decision is made to treat with curative intent chemoradiation.

- b.** Describe a suitable radiation therapy technique and dose fractionation schedule. **(4)**

Include in your answer the chemotherapy regimen.

c.

- i** She presents in week 4 of treatment with severe perineal pain and desquamation. **(2)**

Discuss your management.

- ii** What is the risk of her cancer recurring and what is her overall survival? **(1)**

Question 3

- a. In general, what factors do you take into consideration when deciding on a management strategy for patients with back pain and metastatic disease to the spine. **(3)**

A fit 52 year old male had a nephrectomy 4 years ago for renal cell carcinoma. A year ago he received 20Gy in 5 fractions to a vertebral metastasis. He now presents with progressive disease at the same site causing pain. There is no clinical or radiological evidence of cord compression or other metastases.

- b. What are the management options available to him? **(2)**

- c. The decision is made to offer further radiotherapy. In your prescription, what is the maximum dose you would now accept on the spinal cord in 2Gy fraction equivalent? **(3)**

Justify your answer.

- d. Discuss the potential advantages and disadvantages of using stereotactic ablative body radiotherapy in this patient. **(2)**

Question 4

A 65 year old man presents with a PSA of 0.3 mcg/L 12 months after a radical prostatectomy. His initial pathology showed adenocarcinoma (Gleason 4+5) with extracapsular extension and a positive margin.

- a. What further information do you need to know in order to advise the patient on his management options? **(2)**

A decision is made to offer salvage radiation therapy. Staging investigations show no evidence of disease.

- b. What are the options for treatment volumes? **(2)**

Justify your answer.

- c. Describe a suitable radiation therapy technique and dose fractionation schedule for this patient. **(4)**

- d. Would you advise hormone deprivation in addition to the radiation treatment? **(2)**

Justify your answer.

Question 5

A 60 year old man has a macroscopic endoscopic resection of a well differentiated SCC of the upper right nasal cavity.

- a. How would you further evaluate this patient and what further information do you require? **(2)**

The tumour is 18mm and has been resected with microscopically clear margins. There are no involved nodes (T1N0M0). The decision has been made to treat with adjuvant radiotherapy.

- b. Describe a suitable radiation therapy technique and dose fractionation schedule. **(3)**

Three weeks into treatment the patient requires a two-week treatment break due to unrelated illness.

- c. What are the options for managing this treatment interruption? **(3)**
Justify your answer.

Four years later the patients re-presents with a local recurrence limited to the upper nasal cavity.

- d. What options are available for further management? **(2)**



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Radiation Therapy 2
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Question 1

A previously well 76 year old man has a partial resection of a glioblastoma (GBM) from his left temporal lobe. Post operatively he is ECOG 1.

a. In general, what are the prognostic factors for survival in patients with GBM? **(2)**

b.

i In general, discuss the management options for older patients with GBM. **(2)**

Your answer should provide evidence where relevant.

ii Which strategy would you recommend for this patient? **(1)**

Justify your answer.

A decision is made for the patient to receive radiotherapy.

c. Describe a suitable radiation therapy technique and dose fractionation schedule. **(3)**

Three months after treatment his MRI is reported as showing increased enhancement at the tumour bed.

d. How would you manage this patient? **(2)**

Justify your answer.

Question 2

A fit, 30 year old woman with a past history of melanoma of the left calf presents with a palpable left groin mass. Biopsy confirms metastatic malignant melanoma. There is no further disease apparent on examination and staging investigations. She undergoes an inguinal nodal dissection.

- a. What are the factors you would take into account when considering adjuvant radiation therapy? **(3)**

Justify your answer.

A decision is made to give her post-operative adjuvant radiation therapy.

- b. Describe a suitable radiation therapy technique and dose fractionation schedule. **(3)**

- c. What would be the potential outcome of this treatment in terms of: **(2)**

i Side effects

ii Disease control

This woman subsequently develops in transit subcutaneous metastases on her thigh.

- d. What are the potential management options for this situation? **(2)**

Question 3

A 14 year old boy presents with haematuria. He has a 12cm pelvic mass causing bladder outlet obstruction. Biopsy confirms a bladder/prostate alveolar rhabdomyosarcoma. He has involved right hypogastric and external iliac lymph nodes. There is no distant metastatic disease.

- a.** Outline a management plan for this boy. **(3)**
- b.** Describe a suitable radiation therapy technique and dose fractionation schedule. **(4)**
- c.** What would be the anticipated outcome of this treatment for this boy in terms of:
- i** Potential side effects. **(2)**
 - ii** Disease control. **(1)**

Question 4

A fit 62 year old man presents with three weeks of dysphagia. History and examination is otherwise unremarkable. Investigations reveal a 4cm squamous cell carcinoma in the cervical oesophagus invading the adventitia, close to the suprasternal notch with no invasion of the hypopharynx. There is no nodal or distant metastatic disease.

- a.** Discuss the curative treatment options for this man. **(4)**

Your answer should include the advantages and disadvantages of each approach.

The decision has been made to give definitive chemotherapy and radiation therapy. He has lost 10% of body weight in the preceding three months.

- b.**
- i** How would you manage his nutritional status? **(2)**
 - ii** Describe a suitable radiation therapy technique and dose fractionation schedule. **(4)**

Justify your choice of target volumes.

Question 5

A fit 65 year old woman undergoes a wide local excision and sentinel node biopsy for a right breast cancer. Pathology shows a 10 mm Grade 1 invasive carcinoma, node negative ER/PR positive and Her 2 negative. The closest margin is 5mm (T1N0M0).

- a.** A decision has been made to treat with adjuvant whole breast radiation. **(2)**
What is the rationale for and evidence to support this recommendation?
- b.** Describe a suitable radiation therapy technique and dose fractionation schedule for this patient. **(3)**
- c.** Hypofractionated radiation therapy (HFRT) has become more commonly used in early breast cancer after wide local excision.
- i** What is the evidence for the use of HFRT? **(1)**
- ii** What factors would you consider before recommending HFRT in this setting? **(2)**

An 85-year-old woman has a wide local excision for a right breast cancer. The pathology shows a 17 mm, grade 1 node negative ductal carcinoma with clear margins, ER/PR positive and Her 2 negative.

- d.** What are the options for her adjuvant therapy? **(2)**
Justify your answer.