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POSTGRADUATE INSTITUTE OF MEDICINE
UNIVERSITY OF COLOMBO

MD (CLINICAL ONCOLOGY) PART II EXAMINATION - NOVEMBER 2024

Date:- 18th November 2024 **Time:-** 2.00 p.m. - 4.00 p.m.

PAPER I

Answer all four (04) questions.
Answer each question in a separate book.
Write legibly.

1. A 52-year-old woman with stage III breast cancer presents to the emergency department with fever and malaise. She completed the last cycle of docetaxel-based chemotherapy 10 days back. She has a history of chronic kidney disease (stage 2) and hypertension, for which she takes amlodipine.

On examination:

- Temperature 38.8°C
- Heart rate 115 beats/minute
- Blood pressure 92/60 mmHg
- Respiratory rate 24 breaths/minute
- Oxygen saturation 94% on room air

She has a tunneled line in situ, and her chest x-ray is unremarkable.

Her initial investigation results reveals:

White Blood Cell count	0.2 x 10^9/L	
Absolute Neutrophil count	0.05 x 10^9/L	
Serum creatinine	1.4 mg/dL	(0.7 - 1.3)
C-reactive protein	200 mg/L	

1.1. Discuss the role of granulocyte colony stimulating factor in this clinical situation. (15 marks)

1.2. Outline key steps in managing this patient. (30 marks)

After 5 days of antibiotics patient recovers clinically. Repeat blood culture from the tunneled line is positive while the peripheral blood culture is negative.

1.3. Discuss the difference between line colonization vs. line associated infection. (15 marks)

1.4. Briefly describe the management of her tunneled line. (25 marks)

1.5. Outline the precautions you would take in her future chemotherapy cycles. (15 marks)

Contd..../2-

2.

2.1. A 51-year-old woman with disseminated breast cancer was treated with Capecitabine. She defaulted treatment for 2 months and was brought to the Accident & Emergency Department with a history of nausea, vomiting, constipation, and loss of appetite for 3 days duration. On examination, she was dehydrated and confused with ECOG performance status of 3. Her blood pressure was 120/70 mmHg, and her medical history is insignificant except for the previous diagnosis.

Her initial investigations are given below:

WBC	9.6×10^9/L	
Hb	10.5 g/dL	
ESR	90 mm/1st hour	
Serum potassium	4.3 mmol/L	(3.5 -5.5)
Serum sodium	138 mmol/L	(135 - 145)
Serum calcium	3.4 mmol/L	(2.1 - 2.6)
Serum phosphate	102 IU/L	(44 - 147)
Serum creatinine	1.4 mg/L	(0.7 - 1.3)

2.1.1. What is the most likely diagnosis? (05 marks)

2.1.2. An ECG was taken before the treatment.
List the ECG changes you would expect in this condition. (05 marks)

2.1.3. Outline the initial management of this patient. (15 marks)

2.1.4. If her clinical condition is not improved, what other medications can be used as a second line treatment? (10 marks)

2.1.5. Outline long-term management of the above condition. (15 marks)

2.2. A 65-year-old previously healthy man presented with right upper limb weakness for 2 days and malaise and neck pain for 4 weeks. The weakness progressed to the lower limbs. Examination revealed tenderness of the back of the neck and upper motor weakness in the lower limbs. An urgent MRI scan of the spine revealed an epidural mass at the C2/C3 level, eroding the spinous process of C2 vertebra with intra-spinal extension causing severe compression of the cord.

2.2.1. Outline the immediate management. (10 marks)

Contd..../3-

2.2.2. What are the definitive management options you consider for the spine? (10 marks)

2.2.3. List five (05) underlying malignancies you would consider in the differential diagnosis? (05 marks)

2.2.4. List the investigations which are useful to arrive at the definitive diagnosis including the imaging techniques. (15 marks)

2.2.5. Name the basic immunohistochemical markers which are useful to determine the primary site. (10 marks)

3. A 65-year-old man was diagnosed with poorly differentiated carcinoma of lower oesophagus one year ago. He defaulted treatment and admitted to the oncology unit with total dysphagia and severe back ache. As the initial management intravenous fluids and intravenous Tramadol 50 mg were given.

Investigations revealed growth at the 30 cm of oesophagus totally obstructing the lumen, bilateral lung metastasis and a few vertebral deposits. Decision of the multi-disciplinary meeting is to manage him symptomatically.

3.1. List the options available for feeding of this patient. (10 marks)

3.2. Once the feeding is established, what is your advice to the bystander and the nursing officers related to the following?

3.2.1. Administration of food. (10 marks)

3.2.2. Administration of medicine. (10 marks)

3.3. What are the possible complications of the above feeding methods? (04 marks)

3.4. Once the feeding is established how would you manage the pain in this patient. (18 marks)

The above mentioned feeding method could not be continued because of the complications.

3.5. Describe the steps of establishing the parenteral feeding and precautions that should be taken. (14 marks)

3.6. How would you change the pain management with the parenteral feeding? (18 marks)

Contd..../4-

3.7. Outline the possible side effects of the above analgesics indicating the management options for each? (12 marks)

3.8. State the alternative methods of pain management in this patient besides analgesics. (04 marks)

4.

4.1. A study was conducted to assess the benefit of Olaparib, a Poly adenosine diphosphate–ribose polymerase inhibitor for the treated patients (local and standard systemic treatment) with Her-2 receptor negative, non-metastatic, high risk breast cancer.

Answer the questions based on the details given in the "methods and results" sections of the study abstract.

METHODS

We conducted a phase 3, double-blind, randomized trial involving patients with human epidermal growth factor receptor 2 (HER2)–negative early breast cancer with *BRCA1* or *BRCA2* germline pathogenic or likely pathogenic variants and high-risk clinicopathological factors who had received local treatment and neoadjuvant or adjuvant chemotherapy. Patients were randomly assigned (in a 1:1 ratio) to 1 year of oral Olaparib or placebo. The primary end point was invasive disease–free survival.

RESULTS

A total of 1836 patients underwent randomization. At a prespecified event-driven interim analysis with a median follow-up of 2.5 years, the 3-year invasive disease–free survival was 85.9% in the Olaparib group and 77.1% in the placebo group (difference, 8.8 percentage points; 95% confidence interval [CI], 4.5 to 13.0; hazard ratio for invasive disease or death, 0.58; 99.5% CI, 0.41 to 0.82; P<0.001). The 3-year distant disease–free survival was 87.5% in the Olaparib group and 80.4% in the placebo group (difference, 7.1 percentage points; 95% CI, 3.0 to 11.1; hazard ratio for distant disease or death, 0.57; 99.5% CI, 0.39 to 0.83; P<0.001). Olaparib was associated with fewer deaths than placebo (59 and 86, respectively) (hazard ratio, 0.68; 99% CI, 0.44 to 1.05; P=0.02); however, the between-group difference was not significant at an interim-analysis boundary of a P value of less than 0.01. Safety data were consistent with known side effects of Olaparib, with no excess serious adverse events or adverse events of special interest.

Contd.../5-

4.1.1. What do you understand by double blinding? (06 marks)

4.1.2. What is the role of having a pre-defined primary end point for a study? (06 marks)

4.1.3. Would you expect an impact of double blinding on the analysis of primary end point in this study? Briefly explain your answer. (10 marks)

4.1.4. Calculate the Number Needed to Treat (NNT) for the primary end point of the study. (10 marks)

4.1.5. What is the importance of NNT when interpreting a clinical study? (12 marks)

4.1.6. What do you understand by the term "interim analysis"? (08 marks)

4.1.7. What is the reason to pre define a lower "P" value of 0.01 for the interim analysis in this study? (08 marks)

4.2. Therapeutic index, therapeutic window and therapeutic gain are important parameters of oncological treatments, especially chemotherapy and radiotherapy.

4.2.1. Briefly define the following using the appropriate illustrations:

(a) Therapeutic index (10 marks)

(b) Therapeutic window (10 marks)

4.2.2. Briefly describe the mechanism of this "therapeutic gain" using a dose-response graph. (20 marks)