Study Questions

Choose the ONE best answer.

35.1 A patient is about to undergo three cycles of chemotherapy prior to surgery for bladder cancer. Which best describes chemotherapy in this setting?

A. Adjuvant
B. Neoadjuvant
C. Palliative
D. Maintenance

Correct answer = B. Chemotherapy given *before* the surgical procedure in an attempt to shrink the cancer is referred to as neoadjuvant chemotherapy. Chemotherapy is indicated when neoplasms are disseminated and are not amenable to surgery (palliative). Chemotherapy is also used as a supplemental treatment to attack micrometastases following surgery and radiation treatment, in which case it is called adjuvant chemotherapy. Chemotherapy given in lower doses to assist in prolonging a remission is known as maintenance chemotherapy.

35.2 A 45-year-old man is being treated with ABVD chemotherapy for Hodgkin lymphoma. He presents for cycle 4 of a planned 6 cycles with a new-onset cough. He states it started a week ago and he also feels like he has a little trouble catching his breath. Which drug in the ABVD regimen is the most likely cause of his pulmonary toxicity?

A. Doxorubicin (Adriamycin)
B. Bleomycin
C. Vinblastine
D. Dacarbazine

Correct answer = B. Pulmonary toxicity is the most serious adverse effect of bleomycin, progressing from rales, cough, and infiltrate to potentially fatal fibrosis. The pulmonary fibrosis that is caused by bleomycin is often referred as "bleomycin lung."

35.3 A patient is about to begin therapy with doxorubicin and cyclophosphamide. Which test should be ordered for baseline assessment before treatment?

A. Baseline PFTs
B. Baseline stress test
C. Baseline echocardiogram
D. Baseline urinalysis

Correct answer = C. Irreversible, dose-dependent cardiotoxicity, apparently a result of the generation of free radicals and lipid peroxidation, is the most serious adverse reaction of anthracyclines, such as doxorubicin. Cardiac function should be assessed prior to therapy, and then periodically throughout therapy.

35.4 A 64-year-old man is scheduled to undergo chemotherapy for rhabdomyosarcoma, and the regimen includes ifosfamide. Which is most appropriate to include in chemotherapy orders for this patient?

A. IV hydration, mesna, and frequent urinalyses
B. Leucovorin and frequent urinalyses
C. Allopurinol and frequent urinalyses
D. IV hydration, prophylactic antibiotics, and frequent urinalyses

Correct answer = A. A unique toxicity of ifosfamide is hemorrhagic cystitis. This bladder toxicity has been attributed to toxic metabolites of ifosfamide. Adequate hydration as well as IV injection of mesna (sodium 2-mercaptoethane sulfonate), which neutralizes the toxic metabolites, can minimize this problem. Frequent urinalyses to monitor for red blood cells should be ordered. Leucovorin is used with methotrexate or 5-*FU* (not ifosfamide). Allopurinol has a drug interaction with ifosfamide and is not an agent that prevents hemorrhagic cystitis. IV fluids are correct; however, mesna is also needed.

35.5 Development of signs of which condition should be monitored in patients receiving chemotherapy with ifosfamide?

A. Hand-foot syndrome
B. Rash
C. Cardiotoxicity
D. Neurotoxicity

Correct answer = D. A fairly high incidence of neurotoxicity has been reported in patients on high-dose ifosfamide, probably due to the metabolite, chloroacetaldehyde. Hand-foot syndrome is an adverse effect of 5-*FU* and derivatives. Rash is possible with many drugs, but is not the most appropriate answer here. Cardiotoxicity is an adverse effect of the anthracyclines.

35.6 Which chemotherapy drug can cause nephrotoxicity, neurotoxicity, ototoxicity, electrolyte abnormalities,

and severe nausea and vomiting?

A. Cyclophosphamide
B. Oxaliplatin
C. Etoposide
D. Cisplatin

Correct answer = D. Cisplatin can cause renal failure, neuropathy, hearing loss, electrolyte wasting, and significant nausea and vomiting. Oxaliplatin rarely causes ototoxicity or nephrotoxicity. Cyclophosphamide and etoposide have myelosuppression as the dose-limiting toxicity.

35.7 A patient was mistakenly administered vincristine instead of cytarabine intrathecally. What is the likely outcome of this drug error?

A. Neuropathy
B. Death
C. Renal failure
D. Hearing loss

Correct answer = B. Death. Vincristine is fatal if given intrathecally.

35.8 The appearance of a facial rash with cetuximab is associated with a(n)

A. Negative response to therapy.
B. Positive response to therapy.
C. Drug allergy.
D. Infusion reaction.

Correct answer = B. Patients undergoing therapy with an epidermal growth factor receptor (EGFR) inhibitor such as cetuximab often develop an acneiform-like rash on the face, chest, upper back, and arms. The appearance of such a rash has been correlated with an increased response as compared to patients who do not experience a rash during therapy.

35.9 Which of the following should be administered prior to an infusion of the monoclonal antibody rituximab?

A. Allopurinol and acetaminophen.
B. Folic acid and H_2 receptor antagonist.
C. Antihistamine and acetaminophen.
D. Hepatitis B vaccine and vitamin B_{12}.

Correct answer = C. Patients receiving rituximab may experience an infusion reaction, usually on the first cycle. Hypotension, bronchospasm, and angioedema may occur. Chills and fever may occur, especially in patients with high circulating levels of neoplastic cells, because of rapid activation of complement, which results in the release of tumor necrosis factor-α and interleukins. Pretreatment with diphenhydramine, acetaminophen, and corticosteroids and a slower infusion rate can lessen the chance of this reaction.

35.10 Patients should receive antiviral prophylaxis for herpes zoster while undergoing treatment with which agent for multiple myeloma?

A. Dabrafenib
B. Ipilimumab
C. Cisplatin
D. Bortezomib

Correct answer = D. Bortezomib is known to cause herpes zoster reactivation in patients receiving treatment for multiple myeloma. Patients should receive antiviral prophylaxis while on bortezomib therapy.