

IAEA/ESNM Webinar Series on basic NM

Basic Principles of Radionuclide Therapy and Common Clinical Applications

Self-assessment questions

Q1: Radiation induced cellular effects are due to

1. Self-irradiation and cross fire irradiation
2. Self-irradiation, bystander and cross fire effects
3. Bystander effect and self-irradiation
4. Cross fire and Bystander effects

Answer: 2

Q2: Through direct and indirect ionization, radiation may produce the following DNA Lesions:

1. Single (SSB) and double strand breaks (DSB)
2. DNA protein or DNA-DNA cross links formation
3. Base loss and modifications
4. All of these afore mentioned effects

Answer: 4

Q3: Which is of the following statements is true

1. Ionisations and excitations produced by photons and electrons are sparsely produced in a small targeted volume, but over a wide range.
2. As the weight of an α -particle is very high, it is not deflected and the track of the particle is almost linear and the track path length low.
3. Auger electrons and low energy electrons of energy ($<1\text{keV}$) behave like high LET particles, but in contrast, their range is more than $1\mu\text{m}$.
4. Considering biological tissues, high LET are more deleterious than low LET radiation.

Answer: 2

Q4: Which of the following statements on Bystander effects is true:

1. There is a linear dose-effect relationship
2. There is a logarithmic dose-effect relationship
3. There is no dose-effect relationship
4. Will not occur in the absence of cross-fire effects

Answer: 3

Q5: Dosimetry in RNT is highly recommended since:

1. It provides information on all radiation related effects

2. It reveals better outcome in clinical practice
3. It is less time consuming compared to the use of fixed activities
4. It provides good insight into the dose delivered to a tumor

Answer: 4

Q6: RAI therapy is always indicated in:

1. Subclinical hyperthyroidism
2. Graves' disease
3. Thyroid cancer
4. All of the afore mentioned diseases
5. None of the afore mentioned diseases

Answer: 5

Q7: Which of the following statement is true:

1. Based on interim analysis results, radium-223 significantly improved OS.
2. NETTER-1 Study shows promising results, indicating a prolonged DFS.
3. Both are true
4. Both are false

Answer: 1

Q8: What is not a standard indication for a post-treatment scanning

1. RNT with I-131 MIBG
2. RNT with Sr89
3. RNT with Lu-177-Dotatate
4. RNT with I-131
5. None of the above mentioned indications

Answer: 2

Q9: Which of the following statements is true

1. Deterministic effects have a threshold of dose and the severity of the effect is dose-related.
2. Stochastic effects have no dose threshold but the severity of the effect is not dose related.
3. Both are true
4. Both are false

Answer: 1

Q10: Common stochastic side-effects of RNT are

1. Nausea and vomiting
2. Cancer induction
3. Painful salivary and dysfunction of lacrimal glands

4. None of these

Answer: 4

Q11: Semen preservation is

1. Not recommended prior to treatment with I-131 in DTC
2. Recommended prior to repeated treatment with I-131 in male patients
3. Not recommended prior to treatment with I-131 in DTC, since the effects on spermatogonia are transient
4. Is recommended prior to treatment with I-131 in DTC in all male patients

Answer: 2

Q12: Which of the following statements is true:

1. In female survivors of DTC there is much evidence to support important adverse effects of RAI therapy on gonadal function and fertility.
2. Permanent sterility is expected after a dose of 3 Gy to the ovaries.
3. Both are true
4. Both are false

Answer: 2

Q13: Which of the following statements is true

1. Radiosensitizers are physical and chemical (pharmacological) agents that increase the lethal effects of radiation when administered in conjunction to radiotherapy
2. Synergistic treatments effects are regarded as the creation of a whole that is greater than the simple sum of its parts
3. Both are false
4. Both are true

Answer: 4

Q14: Absolute contraindications for RNT are:

1. Pregnancy and breastfeeding
2. Childhood, pregnancy, bone marrow abnormalities
3. Hematological abnormalities, breastfeeding
4. Planned pregnancy, childhood

Answer: 1

Q15: Which of the following conditions may not require dose reduction in RNT with I-131 MIBG

1. Recent chemotherapy
2. Recent radiotherapy
3. Treatment with drugs that may interfere with uptake
4. Hematological abnormalities (leukopenia, trombopenia)

Answer: 3