

Give one correct answer for each question.

1. Regarding the role of CT in the radiation burden of mankind, all the following are true, except:

- A. Presently, over 60 million CT studies are performed annually in the USA.
- B. Spiral or helical technology means greater coverage in less time, and multiple scans related to contrast administration become standard.
- C. The approximate annual increase of 10% in CT studies in the USA has occurred with only a 1% population increase.
- D. CT studies alone deliver an annual 0.47 mSv *per capita* to the USA population.

2. Which one of the following statements is true?

Some basic radiation values are:

- A. Frontal CXR 0.11 mSv
- B. Abdominal CT 10 mSv
- C. Lung CT 1.33 mSv
- D. Annual background radiation 0.3 mSv

3. Which one of the following statements is false?

- A. The younger the subject, the higher the radiation-induced effects.
- B. Children have a shorter latent period in which a radiation-induced cancer has the opportunity to manifest.
- C. Children are deemed more radiosensitive as they have a larger proportion of actively dividing cells.
- D. Young females are more radiosensitive than males.

4. Regarding digital imaging, identify the one false statement.

- A. PACS relates specifically to the archiving and retrieval of radiological images and reports.
- B. The system is linked to, and forms the backbone of, both the hospital information system (HIS) and the radiology information system (RIS).
- C. Only 42% of clinicians feel that digital picture archiving makes patient follow-up more efficient.
- D. In a survey published in this journal, the majority of respondents felt that there were aspects of a PACS that contribute positively to the level and amount of training opportunities created.

5. Which one of the following statements is false?

- A. Vein of Galen malformations are rare anomalies of intracranial circulation that constitute 1% of all intracranial vascular malformations.
- B. Vein of Galen malformations represent 30% of vascular malformations in the paediatric age group.
- C. Vein of Galen malformations form during the late somite stages of the 7th week of embryonic life.
- D. There is a relationship between the choroidal type of vein of Galen malformation and heart failure in neonates.

6. Identify the one correct statement among the following.

- A. Diffuse infiltrative lymphocytosis syndrome (DILS) is an entity found in patients infected with the human immune deficiency virus (HIV).
- B. Patients present with an intermittent CD8+.
- C. Patients present with lymphocytosis and diffuse lymphocytic infiltration limited to the lung interstitium.
- D. The aetiology is known, and is due to a 'hypo-immune' lung response to HIV or Epstein-Barr virus that results in infiltration of organs by the CD8+ lymphocyte.

7. Regarding the use of fabric for haemostasis, all the following are true except:

- A. Oxidised regenerated cellulose (*Surgicel*) fibrillar is the preferred absorbable material for fast haemostasis.
- B. The absorbable haemostatic materials and (non-absorbable) Teflon felt are macroscopically similar in appearance. Teflon is as efficient for haemostasis as the above-mentioned.
- C. Textile implants are not biocompatible.
- D. Textile implants elicit a foreign body response.

8. Identify the one false statement among the following:

- A. In their review of pregnancy-related ruptured arterial aneurysms, Barret *et al.* list in decreasing order of frequency those of intracranial, aortic, splenic, renal and ovarian artery origin.
- B. Of the above, the ovarian artery location is by far the least frequent, with only 11 cases recorded in the English-language literature.
- C. Concerning hormonal factors, Barret *et al.* noted the results of both animal and human studies suggesting that the pregnancy-related alterations in steroid hormones may cause a variety of arterial changes.
- D. The most common symptom of rupture of ovarian artery aneurysm is sudden haematuria.

9. Regarding radiation effects, identify a single false statement.

- A. Radiation effects can be deterministic, requiring a threshold dose to manifest.
- B. Stochastic effects do not have known thresholds, and the BEIR VII reports indicate a linear related response from very low exposure to radiation.
- C. Ionisation can occur directly with electrons of DNA molecules, but more commonly radiation interaction with water molecules creates hydroxyl radicals that then interact with DNA.
- D. Single-chain damage is repaired with difficulty, but double-chain damage is easily removed by replication. The consequence may be radiation-induced carcinogenesis in the exposed individual, but also this 'radiation-induced genomic instability' can be transmitted to future generations.

10. Identify the single false statement. Douglas Jamieson:

- A. Completed diagnostic radiology training at Tygerberg Hospital and University of Stellenbosch in 1991.
- B. Started his paediatric radiology career under the guidance of Professor Bryan Cremin at Red Cross War Memorial Children's Hospital in Cape Town.
- C. Completed a paediatric fellowship training at The Hospital for Sick Children in Toronto, Canada.
- D. Is a Bafana Bafana loose forward.

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