

General Pathophysiology

TUMORS

1. Point out the correct sequence of the stages in malignant neoplasm:

- 1 Promotion, initiation, dissemination, progression.
2. Progression, promotion, initiation, dissemination.
3. Initiation, promotion, progression, dissemination.
4. Initiation, dissemination, promotion, progression.
5. Dissemination, progression, promotion, initiation.

2. True carcinogens determine the stage of:

1. Promotion.
2. Initiation.
3. Progression.
4. Angiogenesis.
5. Metastasis.

3. What do carcinogens have in common?

1. Physical and chemical structure.
2. Lethal and irreversible disturbance of the genome.
3. Their mitogenic effect.
4. Irreversible, non-lethal and inherited disturbance of the cellular genome.
5. The similar mechanism of causing impact on the genome.

4. Neoplasms are characterized by:

1. Monoclonal cell reproduction.
2. Autonomic reproduction, non-subjected to organism's regulation.
3. Parasitic and toxic behaviour.
4. The individual gets ontogenetically younger.
5. 1, 2, 3.
6. 1, 2, 3, 4.

5. Initiation leads to:

1. Activation of oncogenes.
2. Inhibition of oncogenes.
3. Changes in the activity of apoptotic genes.
4. Stable activation of functionally specific genes.
5. 1, 2, 3.
6. 1, 2, 3, 4.

6. How do the promoters affect the cellular genome:

1. In a cumulative manner with long term effect.
2. To a certain threshold, with no long term effect.
3. Interfering with or without a long term effect.
4. To a certain threshold with an intermittent after effect.
5. They do not affect the cell genome.

7. What kind of effect is caused by the procarcinogenes?

1. Direct carcinogenic.
2. Mitogenic.
3. Stimulating.
4. Indirect carcinogenic.
5. Antimitogenic.

8. What is the common feature of chemical carcinogenes?

1. The cyclopentanoperhydrophenanthrene ring.
2. The electrophilic parts of their molecules.
3. Acetylation of the molecule.
4. They are all polymers.
5. The presence of an organic compound.

9. What mechanism is involved in chemical carcinogenesis?

1. Rupture mutagenesis.
2. Genomic deletion.
3. Spontaneous mutation.
4. DNA adduction mutagenesis.
5. Blocked vital procesess.

10. Once the neoplasm is formed it grows at the account of:

1. Transforming all the surrounding cells into neoplastic.
2. Proliferation and divergent development of a newly formed cellular line.
3. Increased proliferation of pluripotent stem cells.

4. Independent hyperproduction of extracellular matrix.
5. Adaptive polyclonal cellular proliferation.

11. Which of the following are chemical carcinogenes?

1. Heterocyclic and polycyclic hydrocarbons.
2. Aromatic amines and nitrozamines.
3. Alkylating and acetylating agents.
4. Antracyclic antibiotics.
5. All of the above.

12. What mechanism is involved in radiation carcinogenesis?

1. Radiation dose incorporated in the genome.
2. Effect of DNA adduct into the genome.
3. Mutagenesis due to rupture and deletion.
4. Apoptotic mutagenesis.
5. None of the above.

13. UV rays have a carcinogenic effect on the genome through what mechanism?

1. Formation of thymine dimers.
2. *De novo* synthesis of DNA
3. DNA adduct.
4. Transversion of purines into pyrimidines.
5. Selective telomerase effect.

14. Fast transforming RNA viruses have:

1. Blockers of oncogenes.
2. Apoptotic modulators.
3. Virus-modified cellular oncogenes.
4. Antioncogenic moderators.
5. Apoptotic inductors.

15. What mechanism is involved in hormonal carcinogenesis?

1. Permanent activation / inactivation of regulatory genes.
2. Transposition of genetic material.
3. Genomic "sensibilization" to other carcinogenes (cocarcinogenesis).
4. Obligatory preceding cellular disproduction of hormones.
5. 1, 2, 3.
6. 1, 2, 3, 4.

16. The term "malignant potential" is related most often with:

1. Greater number of non-aggressive tumor cells
2. Rapid increase in the number of tumor cells.
3. Increase in the number and activity of the tumor cells
4. Aggressive behaviour of a constant number of tumor cells
5. The time required for double increase the number of tumor cells.

17. What is characteristic for the neoplastic transformation of the genome?

1. Uncontrolled and unnecessary for the organism cellular proliferation.

2. Accelerated cellular proliferation.
3. Non-typical cellular proliferation.
4. More precise and energy sparing cellular proliferation.
5. Biologically defective cellular proliferation.

18. What is the most common mechanism involved in retroviral oncogenesis?

1. Deletion of genetic material.
2. Mutagenesis due to a rupture.
3. Translocation of gene parts.
4. Transversion purines / pyrimidines.
5. Insertional mutagenesis

19. What determines the growth of neoplasms?

1. The time cells need to divide.
2. The percentage of cells currently dividing (proliferating fraction).
3. The number of differentiating tumor cells.
4. The percentage of cells currently dying (dying fraction).
5. 1, 2.
6. 2, 3, 4.

20. Which factor is absolutely necessary for tumor development?

1. Toxic substances secreted by the tumor.
2. The formation of the tumor stroma with adequate vascularization.
3. The need of collaterals.

4. Generating of anticancer immunity.
5. Constant intake of carcinogenes.

21. The term "anaplasia" introduced by Hansemann describes:

1. The nature of the neo - transformation
2. The presence of a cellular program that is not fulfilled
3. Biological cellular disbalance
4. The observed differences between cancer cells and normal cells.
5. Interspecies cellular symbiosis

22. Which is the earliest pathognomonic functional criterion for neoplastic transformation?

1. Ectopic hormone secretion.
2. Obligatory phagocytic activity of tumor cells.
3. Hyperergy of the cell.
4. The lost of contact inhibition of cellular division.
5. "Outsmarting" the adjacent cells.

23. The energy for most neoplastic cells is created by:

1. Oxidative phosphorylation.
2. Isolated anaerobic glycolysis.
3. Aerobic glycolysis.
4. Substrate phosphorylation.
5. Electrochemical transformation.

24. Biochemical analplasia in neoplasms most often refers to:

1. Increased ratio between essential / facultative cellular metabolism.
2. Increased aerobic glycolysis with increased substrate utilisation.
3. Increased metabolism of purines and pyrimidines.
4. Inhibited catabolism of proteins and aminoacids.
5. 1, 2, 3, 4.

25. The biological advantages of neoplastic cells are a result of:

1. More effective substrate utilisation.
2. Distorted hypersensitivity to cellular signals.
3. Their ability to go into mitosis with damaged DNA.
4. Their lack of homotypic cell adhesion molecules.
5. 1, 3.
6. 1, 2, 4.

26. What plays a role in the natural anti-tumor defence?

1. Activated NK-cells and cytotoxic macrophages.
2. Increased secretion of PG E₁ and PG E₂.
3. Increased liver detoxicating function.
4. The paratumor breaking down of secreted neo-metabolites.
5. 2, 3, 4.

27. Which mechanism directly protects the tumor cells from the killer cells of the organism?

1. Non-specific lysis of the attacking cells.

2. Surrounding of the neoplastic cells by blocking antibodies.
3. Secretion of tumor cell inhibitors.
4. Prostaglandine secretion.
5. The coating of the neoplastic cells with an impervious extracellular matrix.

28. What exists as a hypothesis for the inability of the organism to deal with the tumor?

1. Failure of their genes and reduced intensity of the immune reaction.
2. Insufficient number or insufficient activity of the NK-cells (cytotoxic macrophages respectively).
3. Weak antigen immunogenicity of the neo-antigens.
4. Defect contacts between the tumor cells and antitumor antibodies.
5. 1, 3, 4.
6. 1, 2, 3, 4.

29. What is the concept of the hypothesis explaining that the organism could not deal with the tumor because of too delayed immune response?

1. Higher growth potential of the neo-cells.
2. Increased division cycle of the immunoblasts.
3. Everlasting modulation of the tumor surface antigens.
4. T₂-helper activity.
5. 1, 3
6. 1, 2, 3, 4.

30. The effects of the neoplasms on the organism are determined by:

1. Number of tumor cells.

2. Malignant potential of the neoplasm.

3. Localisation of the tumor.

4. Tumor blood supply.

5. 1, 4.

6. 1, 2, 3.