DEPARTMENT OF PATHOLOGICAL PHYSIOLOGY
FACULTY OF MEDICINE, P. J. ŠAFARIK UNIVERSITY, KOŠICE

Topics and study materials for the 1st credit test
General medicine
2023/2024
Etiology

1. Pathophysiology

- The basic principles of pathological and clinical physiology.Ch 1. Rácz, O.: In: Oliver Rácz et al. (Ed.): Compendium of General Pathological Physiology, Vol. 1, p. 1 – 21.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

2. Health and disease

- Health and disease, general nosology and etiology. Ch 2.Rácz, O.: In: Oliver Rácz et al. (Ed.): Compendium of General Pathological Physiology, Vol. 1, p. 22 – 37.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

3. Physical factors: mechanical, electric, EMF, ionizing radiation, thermal injuries, hypo/hyperthermia, hypo/hyperbaria

- Physical factors as causes of diseases and health damage (Rácz, O. et al.) http://patfyz.medic.upjs.sk/acom/physicalcely.pdf Online
- Unit 1 Cell and Tissue Function; Ch2 Cellular Responses to Stress, Injury, and Aging, p. 31 – 48 In: Porth, C.M. (Ed.) Essentials of pathophysiology, 4rd Edition, Wolters Kluwer/Lippincot Williams & Wilkins, 2011, ISBN-13: 978-1-4511-9080-9.
- Unit I, Ch2Altered Cellular and Tissue Biology, p. 49 – 102. In: McCance, K.L., Huether, S.E. (Ed.) Pathophysiology, 7thEdition, Mosby, Elsevier Inc., 2014, ISBN: 978-0-323-08854-1.
- Environmental and Nutritional Diseases – Injury by Physical Agents. In Kumar, V., Abbas, A.K., Aster, J.C. (Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Sauders, ISBN: 978-0-8089-2450-0, p. 426 – 432.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

4. Chemical factors

- Exogenous chemical factors as causes of diseases. (Rácz, O. et al.) http://patfyz.medic.upjs.sk/acom/chemicalcely.pdf Online
- Unit 1 Cell and Tissue Function; Ch2 Cellular Responses to Stress, Injury, and Aging, p. 31 – 48 In: Porth, C.M. (Ed.) Essentials of pathophysiology, 4rd Edition, Wolters Kluwer/Lippincot Williams & Wilkins, 2011, ISBN-13: 978-1-4511-9080-9.
- Unit I, Ch2Altered Cellular and Tissue Biology, p. 49 – 102. In: McCance, K.L., Huether, S.E. (Ed.) Pathophysiology, 7thEdition, Mosby, Elsevier Inc., 2014, ISBN: 978-0-323-08854-1.
- Environmental and Nutritional Diseases – Injury by Chemical Factors. In Kumar, V., Abbas, A.K., Aster, J.C. (Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Sauders, ISBN: 978-0-8089-2450-0, p. 406 – 419.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

5. Nutrition - undernutrition, overnutrition,obesity, metabolic sy., malnutrition, vitamins, minerals, trace elements

- Disorders of nutrition Ch5. Rácz, O.,Šofranková, A.: In: Oliver Rácz et al. (Ed.): Compendium of General Pathological Physiology, Vol. 1, p. 114 – 174.
- Unit 2 Integrative Body Functions; Ch10 Disorders of Nutritional Status, p. 223 – 240 In: Porth, C.M. (Ed.) Essentials of pathophysiology, 4rd Edition, Wolters Kluwer/Lippincot Williams & Wilkins, 2011, ISBN-13: 978-1-4511-9080-9.
- Environmental and Nutritional Diseases – Nutritional Diseases. In Kumar, V., Abbas, A.K., Aster, J.C. (Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Sauders, ISBN: 978-0-8089-2450-0, p. 432 – 450.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

6. Genetics

- Unit 1 Cell and Tissue Function; Ch 5 Genetic Control of Cell Function and Inheritance, p. 87 – 105; Ch6 Genetic and Congenital Disorders, p. 106 - 128 In: Porth, C.M. (Ed.) Essentials of pathophysiology, 4rd Edition, Wolters Kluwer/Lippincot Williams & Wilkins, 2011, ISBN-13: 978-1-4511-9080-9.
- Unit II, Ch4 Genes and Genetic Diseases, p. 135 – 163; Ch6 Epigenetics and Disease, p. 183 – 190. In: McCance, K.L., Huether, S.E. (Ed.) Pathophysiology, 7thEdition, Mosby, Elsevier Inc., 2014, ISBN: 978-0-323-08854-1.
- Genetic disorders. In Kumar, V., Abbas, A.K., Aster, J.C. (Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Sauders, ISBN: 978-0-8089-2450-0, p. 137–183.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

7. Hereditary metabolic disorders

- Genetic disorders. Enzyme Defects and Their Consequences. In Kumar, V., Abbas, A.K., Aster, J.C. (Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Sauders, ISBN: 978-0-8089-2450-0, p. 142–158.
- Lecture: Beňačka, R.: Hereditary metabolic disorders.
- Recommended: tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

8. Inner milieu disorders – water & electrolytes,acid-base balance disorders, edema

- Unit 2 Integrative Body Functions;Ch 8 Disorders of Fluid, Electrolyte, and Acid-Base Balance, p. 159 – 205 In: Porth, C.M. (Ed.) Essentials of pathophysiology, 4rd Edition, Wolters Kluwer/Lippincot Williams & Wilkins, 2011, ISBN-13: 978-1-4511-9080-9.
- Unit I, Ch3The Cellular Environment: Fluids and Electrolytes, Acids and Bases, p. 103 – 134. In: McCance, K.L., Huether, S.E. (Ed.) Pathophysiology, 7thEdition, Mosby, Elsevier Inc., 2014, ISBN: 978-0-323-08854-1.
- Acid-base balance. Ch3. In: McKoy, E.S.C., Walmsley, N.: A primer of chemical pathology. World Scientific.
- Sodium and Water Metabolism. Potassium. Ch 1-2. In: McKoy, E.S.C., Walmsley, N.: A primer of chemical pathology. World Scientific, p. 1 – 34.
- Calcium. Phosphate. Magnesium.Ch 6-8. In: McKoy, E.S.C., Walmsley, N.: A primer of chemical pathology. World Scientific, p. 88 – 113.
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

9. Microcirculatory failure (shock), hypercoagulation (DIC)

- Hemodynamic disorders, thromboembolic disease, and shock. Ch 4. In: Kumar, V., Abbas, A.K., Aster, J.C.(Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Saunders, ISBN: 978-0-8089-2450-0, p. 131 – 135.
- Disseminated intravascular coagulation (DIC). Ch14. In: Kumar, V., Abbas, A.K., Aster, J.C.(Ed.): Robbins and Cotran Pathologic basis of disease. 9th Elsevier, Saunders, ISBN: 978-0-8089-2450-0, p. 663–665.
- Recommended: lectures, tutorials, data on dept. web; Other reading: pract. seminars, internet resources (Wikipedia, etc.).

10. Biochemical data

- Reference ranges of biochemical and hematological parameters in blood http://patfyz.medic.upjs.sk/estudmat/Biochemical%20and%20hematological%20reference%20ranges.pdf
- Reference ranges for blood test http://en.wikipedia.org/wiki/Reference ranges for blood tests
- Recommended: lectures, tutorials, data on dept. web. Other reading: pract. seminars, internet resources (Wikipedia, etc.)

Compositions of the test

Multiple choice questions (30). Approximate schedule:

1. Pathophysiology – etiology, pathogenesis, sanogenesis, thanatogenesis
2. Health and disease – pathological state, findings, process; stages and outcomes of disease
3. Chemical factors – general description, classes of chemical damage
    a. Heavy metals (Cd, Hg, Pb)
    b. CO, cyanides
    c. Smoking, alcohol
4. Physical factors
    a. Mechanical energy (wounds, Crush sy., Blast sy.)
    b. Atmospheric pressure (hypobaria, hyperbaria, caisson dis.)
    c. Acceleration, deceleration (+ kinetosis, weightlessness)
    d. Thermal effects (burns, chilblains, hypo- hyperthermia)
    e. Electromagnetic field (UV, infrared, microwave…), electric current
    f. Ionizing radiation (sensitivity of tissues; acute and chronic radiation dis.)
5. Nutrition
    a. Malnutrition quantitative, qualitative, total, selective, marasmus, kwashiorkor, starvation
    b. Obesity, metabolic sy.
    c. Avitaminoses
    d. Trace elements – overview; iron – deficiency, overdose
6. Genetics
    a. Mutations (classification)
    b. Monogenic diseases
    c. Chromosomal aberrations (numeric disorders of autosomes incl. Down sy., & gonosomes
    d. Non-mendelian heredity (mitochondrial dis., triplet repeat mutations, imprinting, mosaicism)
7. Inner milieu
    a. Water, electrolytes (Na, K, Ca, Mg, phosphates)
    b. Acid-base balance disorders

    c. Edema
8. Microcirculatory failure (shock)
    a. Shock, types of shock
    b. Multiple organ dysfunction syndrome (MODS)
    c. Disseminated intravascular coagulation (DIC)

Open questions. Approximate composition:

1. Physical factors
2. Chemical factors
3. Genetics (monogenic diseases or chromosomal aberrations)
4. Hereditary metabolic disorders
5. Nutrition (malnutrition or obesity or vitamins or trace elements)
6. Inner milieu (+ case study)
7. Shock, DIC
8. Reference ranges of biochemical and hematological values

In multiple choice test each question consists of 5 independent choices (a-e) to which students answer by Y or N (yes/no). Everyone choice is awarded by 1 point. Altogether it is possible to achieve 150 points in multiple-choice part of test. Each open question is credited by certain maxima of points, which can differ in various questions according to importance, content, and difficulty.

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Head of Department

16 October 2023