

SYSTEMIC AND PATOLOGICAL PHYSIOLOGY (SAPP)

Master study

2. year, winter semester 2021, obligatory subject, 2-0-2, 5 credits

Educational period: 20.09.2021 – 11.12.2021

Credits granting: 13.12.2021 – 17.12.2021

Examination period: 04.01.2021 – 12.02.2021

Form of education: combined (distance and presence). All forms of teaching will take place within the timetable for the subjects. Distance form of education will require communication media: Teams for Microsoft, Moodle. Technical support with media: PharmDr. S. Kosírová, PharmDr. T. Rajtík

Teachers responsible for preparing individual topics are listed in the syllabus. Teachers responsible for laboratory classes are listed on the timetable. Technical staff: Mgr. A. Chalányiová, V. Haššová, E. Vilémová, S. Kolembusová

1. week 20.-24.9.2021

1. LECTURE doc. Paul Hrabovská

Overview of functions and pathophysiology of the CNS.

Functional anatomy of the CNS. Sensory system (vision and perception, reception and processing of sound information, sense of taste and taste, somatosensory system). Motor system. Integrative systems (autonomic nervous system, reticular formation, hypothalamus, thalamus, cognitive properties, executive functions).

Neurological diseases. Sudden impairment of brain function (trauma, inflammation, bleeding - sudden stroke, aneurysm). Neurodegenerative diseases (Alzheimer's disease, Parkinson's disease, Creutzfeldt-Jakob disease). Demyelinating diseases (multiple sclerosis). Excitation and transmission disorders (epilepsy). Cerebral palsy.

1. Practical training doc. Paul Hrabovská /dr. Kulcsár *technician: p. Haššová*

Repetition: The basic concept of diseases. Etiology, pathogenesis, symptomatology, complications and prevention of the development of diseases. Categorization of diseases. International Classification of Diseases (10th revision)

Theoretical part: Clinical picture of selected CNS diseases - motor symptoms, cognitive impairment.

Practical part:

- Practicing basic terminology (risk factors, etiology, pathogenesis, symptoms, complications)
- Cognitive ability testing – short cognitive function tests (MMSE), Montreal Cognitive Function Screening (MOCA), Clock Test
- Case: memory disorders - dementia (age vs. Alzheimer's disease), meningitis vs. encephalitis

Symptomatology - pathophysiology: *hazy vision, optical neuritis, diplopia, tremor, balance disorders, paraesthesia, hyperesthesia, hyaesthesia, urinary retention, incontinence, rigidity, bradykinesia, aphasia, apraxia, agnosia, agitation, memory disorders, speech, anxiety, depression, ataxia, cognitive changes*

2. week 27.9.-1.10.2021

2. LECTURE **doc. Paul Hrabovská**

Mental and behavioural disorders: psychotic diseases (schizophrenia, affective disorders, post-traumatic stress disorder), non-psychotic disorders (anxiety, behavioral and personality disorders, disorders of psychological development).

2. Practical training **doc. Paul Hrabovská /dr. Kulcsár** *technician: p. Haššová*

Repetition: Neuronal signaling and neurotransmitter systems in the CNS. Synapse, neurotransmission, neurotransmitters, neuromodulators and receptors of the nervous system.

Theoretical part: Selected co-morbidities of mental illness - headaches and sleep disorders.

Practical part:

- Diagnostic tests for patients with selected neuropsychiatric diseases: Nine-point patient health questionnaire (PHQ 9), Hamilton psychiatric assessment scale for depression.
- Cases: sleep disorders, selected psychiatric conditions

Symptomatology - pathophysiology: *sleep disorders, memory, forgetfulness, fear, light sensitivity, fatigue*

3. week 4.10.-8.10.2021

3. LECTURE **doc. Stankovičová**

Pathophysiology of cardiac function. Ischemic heart disease, angina, myocardial infarction. Heart failure. Heart rhythm disorders. Sudden death. Valve disorders

3. Practical training **doc. Stankovičová/dr. Dingová** *technician: p. Vilémová*

Repetition: Physiology of blood circulation, heart cycle, rhythm – ECG. Blood supply to the myocardium. Control and regulation of cardiac activity, Frank-Starling law

Theoretical part: Contractility disorders – cardiomyopathy, myocarditis - rheumatic fever. Transplantation.

Practical part:

ECG recording analysis - electrical activity of the heart and disturbances

- Primary and secondary ischemic heart disease - prevention (risk factors)
- Case reports: Myocardial infarction. Heart failure. Atrial fibrillation

Symptomatology - pathophysiology: *chest pain (stenocardia), fatigue, dyspnea, cough, sweating, anxia edem cardiogenic shock*

4. week 11.10.-15.10.2021

4. LECTURE **doc. Stankovičová**

Systemic physiology and pathophysiology of circulation: atherosclerosis, hypertension, hypotension, collapse, shock

4. Practical training **doc. Stankovičová/dr. Dingová** *technician: Mgr. Chalányiová*

Theoretical part: Pathophysiology of blood circulation in the lower extremities. Circulatory disorders in the arteries (functionally and organically conditioned disorders: Raynaud's phenomenon, aneurysm, vasculitis). Circulatory disorders in the veins of the lower extremities (chronic venous insufficiency)

Repetition: Physiology of circulation, blood pressure, global and local control of blood volume, microcirculation and its disorders, edema, lymph. Circulatory disorders (thrombosis, embolism, aneurysm), stroke.

Practical part:

- Deep and surface varices
- other varice localizations (GIT)

Symptomatology - pathophysiology: *claudication, varices, cyanosis, stasis, postural skin discolouration and trophic changes in tissues*

5. week 18.10.-22.10.2021

5. LECTURE **dr. Králová**

Systemic physiology and diseases of the kidney and urinary system. Renal circulatory disorders (nephrosclerosis, glomerulosclerosis. Nephrosis (acute and chronic). Renal insufficiency and failure. Tumors. Infectious and obstructive disorders of urinary tract. Congenital disorders.

5. Practical training **dr. Králová** *technician: Mgr. Chalányiová*

Theoretical part: Pathophysiology of inflammatory diseases (pyelonephritis, glomerulonephritis). Nephrotic vs. Nephrotic Syndrome

Repetition: Glomerular and tubular functions of nephron (glomerular filtration, tubular reabsorption and secretion). Function of the urinary tract. Composition and properties of urine. Regulation of renal function (RAAS – renin-angiotensin-aldosterone system)

Practical part:

- Evaluation of renal parameters of patients
- Urinary formation and composition disorders
- Cases: benign prostatic hyperplasia, Nephrotic vs Nephritic syndrome

Symptomatology - pathophysiology: *proteinuria, haematuria, urolithiasis (stones), nycturia, micturition, incontinence*

6. week 25.10.-29.10.2021

6. LECTURE dr. Kosírová

Systemic and pathological physiology of breathing - Physiology and disorders of respiratory regulation, ventilation, perfusion and diffusion. Obstructive vs. restrictive pulmonary diseases. Respiratory insufficiency acute vs. chronic.

6. Practical training dr. Kosírová *technician: p. Haššová*

1. TEST

Theoretical part: Pathophysiology of inflammatory diseases of the upper respiratory tract – angina, whooping cough. Asthma vs. chronic obstructive pulmonary disease. Emphysema. Atelectasis. Covid-19

Repetition: Respiratory distress syndrome, SARS, pneumonia, bronchopneumonia.

Practical part:

- Analysis of pathologically altered spirometric records
- Case of HDC disease, angina, whooping cough, asthma, COPD

Symptomatology - pathophysiology: *cough productive dry, sputum, dyspnoea, hypo/hyperventilation, cyanosis, granuloma, cavern, haemoptysis, abscess*

7. week 1.11.-5.11.2021

7. LECTURE dr. Dingová/ dr. Kiliánová

Systemic physiology and pathophysiology of GIT. Physiology of the gastrointestinal tract, blood supply, perch. Reflux disease, irritable bowel syndrome, sudden abdominal events, ileus, hernia, colorectal cancer.

7. Practical training dr. Dingová/ dr. Kiliánová *technician: p. Vilémová*

Theoretical part: Crohn's disease, ulcerative colitis, ulcer disease,

Practical part:

- Investigative techniques for GIT (rtg, NMR, CT, ultrasound, gastrofibroscopy, colonoscopy...) examination/, analysis of gastric juice
- Cases

Symptomatology – pathophysiology: loss of appetite, pyrosis, dyspepsia, abdominal cramps, abdominal pain, vomiting, nausea, diarrhoea, constipation, malabsorption, bleeding (haematemesis, meleon/meléna), changes in the weight, changes in the skin colour, adnexa, fever

8. week 8.11.-12.11.2021

8. LECTURE **dr. Foltánová**

Pathophysiology of liver diseases (inflammatory, metabolic, cirrhosis, tumors, failure), biliary inflammation (inflammation) and exocrine pancreas (inflammation, insufficiency). Portal hypertension.

8. Practical training **dr. Kosírová** *technician: p. Kolembusová*

Theoretical part: Nutrient absorption disorders (coeliac, lactose intolerance, histamine intolerance). Functional and metabolic disorders of the liver (jaundice, hepatitis, stones).

Practical part: Diets – advice for special diets (hypertension, diabetes, obesity, gout and others), adjustment of the diet of patients with various intolerances (e.g. lactose intolerance, gluten intolerance, histamine intolerance).

Symptomatology - pathophysiology: *ikterus, ascites, steatosis, oesophageal varices, coagulopathy*

9. week 15.11.-19.11.2021

9. LECTURE **dr. Foltánová**

Pathophysiology of the skin and infectious diseases. Transmission, identification of the agent. Bacterial, viral, mycotic and parasitic diseases of the skin: pyoderma, furunculitis. Skin changes in childhood, adulthood, old age. Acne.

9. Practical training **dr. Foltánová** *technician: p. Vilémová*

Theoretical part: Children's infectious diseases - measles, mumps, rubella. The importance of vaccination. Nosocomial infections.

Practical part:

- **Case:** warts, herpes (simplex, zoster), smallpox, eczema, thrush

Symptomatology - pathophysiology: *hypergranulosis, achanosis, spongiosis, lichenification, erosion, ulcer, macula, papula, pustula, bulla, vesicles, squamous, comedo, vitiligo*

10. week 22.11.-26.11.2021

10. LECTURE dr. Rajtík

Pathophysiology of the reproductive system of men and women, hormonal regulation of changes in the structure of the uterine wall by the action of hormones. Disorders of sex hormones. Pregnancy, organization of blood supply of the fetoplacental unit and its disorders. Pathological conditions in pregnancy - preeclampsia, eclampsia.

10. Practical training dr. Rajtík *technician: p. Haššová*

Theoretical part: Tumors, inflammations, AIDS, syphilis, gonorrhoea. Skin manifestations of venereal diseases.

Repetition: Developmental disorders, prostatic hypertrophy

Practical part:

- Breast investigation manual
- Cases
- Identification of histological preparations

Symptomatology - pathophysiology: *dysmenorrhoea, endometriosis, placental disorders, erectile dysfunction, infertility*

11. week 29.11.-3.12.2021

11. LECTURE dr. Králová

Pathophysiology of allergic and autoimmune diseases. Hypersensitivity reaction type I-IV. Anaphylactic shock. Immunity – autoimmune diseases - systemic lupus erythematosus, immunodeficiency, AIDS.

11. Practical training dr. Králová *technician: p. Kolembusová*

2. TEST

Theoretical part: Allergy. Atopic dermatitis. Psoriasis. Rheumatoid arthritis

Practical part

- Epicutaneous tests, diaminooxidase,
- Case: Atopic dermatitis, nappy dermatitis,

Symptomatology - pathophysiology: *pruritus, dry skin, hyperkeratosis, atopy, herpes, sweating, stretch marks, hair loss*

12. week 6.12.-10.12.2021

12. LECTURE dr. Rajtík

Cancers. Nomenclature, classification, distribution of true, false, predisposing factors, molecular concept of carcinogenesis, oncogenes, angiogenesis, consequences, metastases, cysts

12. Practical training dr. Rajtík technician: p. Kolembusová

Theoretical part: Hormonal disorders in the sense of hyper or hypofunction (pituitary gland, parathyroid glands, thyroid gland, adrenal glands - pheochromocytoma).

Repetition: Autoimmune diseases. Diabetes mellitus I type, Hashimoto's goiter

Practical part:

- Case: hormonal disorders
- Summary of lessons learned from sapf in the form of cases

Symptomatology - pathophysiology: *exophthalmus, gynecomastia, galactorhea, gigantism vs. acromgalia, cretinism vs. myxedem, weight gain, weight loss,*

13. week 13.12.-17.12.2021

13. topic - self-study

Repetition: Diseases of the musculoskeletal system – bones, joints, muscles

Practical part: teachers according to schedule technician: p. Haššová

Summary of teaching subject, additional tests

Public holiday: 1. a 17.11.2021

Pretests are written from the topics taken over by the date of the test.

Course completion criteria, the assignment of the course will be entered into the systems in the last teaching week (13.12.2021 - 17.12.2021) by the assistant specified in the schedule for

the relevant group. Information on resit/additional pretests and exam tests will be given in Moodle, AIS, on the departments website

Recommended literature:

Vander`s Human Physiology 12th Ed, McGraw/Hill, Ed., NY, by EP Widmaier, H Raff, KT Strang, 2011, ISBN 978/0/07/122215/0

Essentials of Human Physiology for Pharmacy, CEC Press, 2008, by LK McCorry (e-version)

Essentials of Pathophysiology, 3rd edition, by C.M. Porth. Ed. Lippincott and Wilkins: Philadelphia, 2011, ISBN 0781770874

General and Systemic Pathology, 4th edition, by J.C.E. Underwood. Ed. Churchill Livingstone: NY, 2004 ISBN 0443073341/9780443073342

Textbook of pathology, 7th edition, by H. Mohan. Ed. Jaypee Brothers Medical Publishers (P) Ltd, New Delhi, India, 2014, ISBN 978-9351523697

Essentials of Pathophysiology for Pharmacy, 1st edition, MM Zdanovicz, CRC Press, 2002, by ISBN 781587160363 (e-version)

Pathophysiology, by I Hulín, Bratislava: Slovak Academis Press, 1997, ISBN 80-85665-90-5

Lecture and exercise materials are available in Moodle's online system

2021-10-08 Bratislava

assoc. prof. T. Stankovičová, MD. CSc.

guarantor of the subject

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head of the department