Teaching Program of Oncology for students of English Division Medical Faculty (6th year of studies)
of Wroclaw Medical University

Department of Oncology
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Faculty of Postgraduate Medical Training

Number of hours
10 hours of lectures – 6th year of studies
50 hours of classes – 6th year of studies

Lecturer: Prof. Jan Kornafel, M.D., Ph.D.
Lectures
5 lectures 2 hours each for the students of 6th year run by the Department of Oncology

Subjects

I. Malignant tumors as a medical and social problem. Epidemiological measures and registration of neoplasms. Epidemiology and the results of neoplasms treatment. Organization of the fight with cancer in Poland. Primary and secondary prophylaxis. Screening examinations.

II. The strategy of identification and treating of neoplasms. Oncological sensitivity – early symptoms of cancer. Methods of identifying the neoplasms the way to good diagnosis. Staging of the neoplasms (cTNM, pTNM, yTNM, FIGO). Cancer markers. Prognostic and predictive factors. The role of first contact physician in identifying the cancer and the nursing the oncological patient. Acting with the oncological patient after finishing oncological treatment. Sources of knowledge about the directives concerning the procedures in oncology.


IV. Rules and techniques of radiotherapy application in neoplasms of various location: area of head and neck, OUN, lung, rectum and anus, feminine sexual organs, prostate gland, urinary system, neoplasms of soft tissues and bones, system neoplasms. Radiotherapy as an element of the sparing treatment of the organ or it function.

Classes

50 hours of classes divided into 4 thematic blocks for the students of 6th year run by the Department of Oncology.

I. Block of classes devoted to practical application of radiotherapy (14 hours)
   - Block of classes devoted to practical application of radiotherapy (14 hours)
   - Block of classes devoted treatment of neoplasms of the chest organs, head and neck, glands, soft tissues, bones and skin (12 hours)
   - Block of classes devoted treatment of the cancer of urogenital system and breast cancer (12 hours)
   - Block of classes devoted to treating the cancer of alimentary system. Treatment of other neoplasms. Specific situations in oncology. (12 hours)

I. Block of classes devoted to practical application of radiotherapy (14 hours)

1. Radiotherapy – physical and biological basics
   - Physical basics of radiotherapy (direct and indirect action of the radiation, lethal and sub-lethal damages, biological effect in respect to the healthy tissues and neoplastic tumor)
   - Factors influencing the radiosensitivity of the neoplasms and tissues
   - Division of neoplasms depending on their radiosensitivity
   - Post radiation reactions (division of early and late, critical organs) prevention and treatment

2. Teletherapy
   - The notion of radical therapy (elective) and palliative
   - teletherapy (definition, equipment, principles)
   - planning the therapy (stages of preparing and realization, systems of planning, kinds of radiating)
   - techniques of teletherapy (planning 2D, 3D, 4D – conformal, stereotactic radiotherapy, IMRT)
   - using modern picturing techniques in planning of teleradiotherapy – (fusion of TK, MR, PET pictures)
   - the ways of fractioning the dose (hipofractionation, hiperfractionation, conventional fractionation) - biological effect in healthy tissues and the tumor

3. Brachytherapy
   - brachytherapy (definition, kinds, equipment, biological effect)
   - planning of brachytherapy (after loading techniques, systems of planning, realization of treatment plans)
   - brachytherapy HDR, MDR, LDR, PDR
   - interoperative radiotherapy

4. Treatment sparing the organs – the role of radiotherapy
   - the directions in sparing treatment of neoplasms – cancer of breast, anus, rectum, sarcoma of soft tissues and bones, neoplasms of head and neck, cancer of prostate gland.

5. Specific use of radiotherapy application The control of quality and the safety of treatment.
   - radiotherapy of the neoplasms in children - indication – associated treatment, side effects of the treatment
II. Block of classes devoted to the treatment of the neoplasms of the chest organs, organs of head and neck, endocrine glands, soft tissues, bones and skin (12 hours)

1. Neoplasms of lung, mediastinum, mesothelioma of pleura
   - Epidemiological situation, the reasons of bad effect of the treatment
   - The principles of diagnostics of lung cancer
   - The basics of associated treatment
   - Radical radiochemotherapy of microcellular neoplasm of lung (DRP)
   - Palliative chemotherapy DRP
   - Radiotherapy and chemotherapy as the methods of postoperational treatment of non-microcellular cancer of lung (NDRP)
   - Palliative chemotherapy of NDRP patients
   - Palliative radiotherapy of lung cancer
   - Prophylactic radiation of the DRP patients
   - Idle upper vein syndrome – the role of radiotherapy
   - The tumors of mediastinum at adults and children
   - Treatment of thymoma
   - Treatment of germinal cancers of mediastinum
   - Procedure with the patients of mesothelioma of pleurisy

2. Carcinoma of larynx and other neoplasms of the area of head and neck.
   - Indications to primary surgical treatment, radiotherapy and radiochemotherapy
   - Meaning of supplementary, palliative radiotherapy.
   - The principles of associated treatment
   - Acting with metastasis to lymph glands of the neck – indications for surgical treatment and radiotherapy
   - Carcinoma of salivary gland – the principles of operation depending on histopathological tissue of the tumor
   - Sanation of teeth before radiotherapy, the role of the hygiene of oral cavity, post radiation reaction.
   - The ways of prevention late post radiant reactions

3. The cancer of thyroid and other endocrine glands
   - Meaning and limitations of thin needle biopsy in differential diagnosis
   - Indications for genetic tests in the cancer medullary carcinoma patients of thyroid, prophylactic action
   - The rules of surgical treatment of the thyroid cancer. Action with lymph glands, radicalization, new techniques supporting the treatment of thyroid cancer sparing larynx nerves.
   - Treatment with radium isotope
   - Indications for teletherapy
   - Neoplasms of endocrine glands: the principles of action
4. The neoplasms of soft tissues and bones, GIST
   o The rules of properly performed biopsy of the tumor of soft tissues and bones
   o Associated treatment of sarcoma, indications for radiotherapy and chemotherapy.
   o Sparing treatment of sarcoma in children and adults (margins of resection, section surgeries, indications for amputation)
   o Hyperthermic perfusion of limbs
   o System and surgical treatment GIST

5. Melanoma, cancer and other neoplasms of skin
   o Recommended margins of surgical section in various skin neoplasms.
   o Acting with lymph glands, indications for lymphadenectomy, perspectives of biopsy of guarding gland in skin cancer, complications after lymphadenectomy and radiotherapy.
   o Chemotherapy – hyperthermic perfusion of limbs
   o Primary and secondary prophylactics

III. Block of classes devoted to treatment of neoplasms of urogenital system and the breast cancer (12 hours)

1. Breast cancer
   o Indications of associated treatment, sequence of methods of treatment
   o Sparing treatment – the role of radiotherapy, kinds of radiotherapy (indications for tele and brachytherapy)
   o Neoadjuvant chemotherapy, complementary therapy, treating the disease in the general state,
   o Prognostic and predictive factors in breast cancer
   o Hormonotherapy of breast cancer – the principles of acting, new medicines.
   o Aimed treatment anti-EGFR, anti-VEGF – indications for the treatment
   o Progress in surgery – the tendency to use the most sparing treatment (operation of Urban, Halsted, Patey, Madden, sparing treatment, reconstructive surgery)
   o Perspectives of guarding gland biopsy, other techniques of sparing lymph glands, prophylaxis and treatment of lymphatic swelling after armpit lymphadenectomy and radiation
   o Treatment of metastasis to bones: the role of bi-phosphonians, indications for system treatment with an isotope (strontium, samarium), palliative radiotherapy
   o Treatment of metastasis to brain (the role of neurosurgical treatment and radiotherapy)
   o Genetic predispositions and factors favoring the development of breast cancer – the rules of prophylaxis (scheme of control tests, antiestrogens, ovariectomy, prophylactic mastectomy)
   o DCIS, LCIS – procedures (surgery, radiotherapy, control)
   o Secondary prophylaxis

2. A. Cervical carcinoma
   o Primary and secondary prophylaxis of cervical carcinoma, risk factors, perspectives of vaccination
Operational treatment according to Wertheim method with Meigs’ modification
Indications for brachytherapy and teletherapy in radical and palliative treatment of cervical carcinoma
Methods of associated treatment - radiochemotherapy of cervical carcinoma
Radiotherapy as the association of two methods – of brachyradiotherapy and teleradiotherapy – individual planning

B. Endometrial carcinoma
- Indications and sequence of surgical treatment and radiotherapy
- Teletherapy and brachytherapy of endometrial carcinoma
- Identifying specific group of risk of endometrial carcinoma in post menopausal women
- Consolidation of therapeutic programs in the aspect of the carcinoma of very low chemosensitivity
- Abolishing of liberalization of indications for radiotherapy supplementing surgery??
- Treatment of endometrial carcinoma relapses
- Endometrial carcinoma diffused in peritoneal cavity ??

3.
A. Neoplasms of vulva and vagina
- Qualification to proper sequence of applied therapeutic methods
- The age of the patient vs. the choice of the treatment method (operational treatment and radiotherapy), procedures with lymph nodes
- Diagnostics difficulties in case of the neoplasms which are locally advanced
- Role of radical therapy as the independent method and associated with surgery
- Monitoring of patients after associated treatment, treatment of relapses, palliative radiotherapy
- The most often complications after lymphadenectomy of the armpit with following radiotherapy

B. Gestational trophoblastic disease (GTD)
- The role of oncologist and collaboration with gynecologist
- Evaluation of the factors of unfavourable prognosis in GTD: prognostic groups
- Indications for radiotherapy and system treatment
- The role of beta-HCG in monitoring of the treatment and observation of the GTD patients
- Cases of non typical clinical course: location, marker
- Oncological treatment vs. maintaining procreation abilities

4.
A. Ovarian carcinoma
- The rules of surgical treatment of ovarian carcinoma, indications for cytoreductive procedure
- System treatment of ovarian carcinoma
- Contemporary diagnostic methods in low stages of ovarian carcinoma – searching for new markers
The problem of chemoresistance vs. Complex histological structure of ovarian carcinomas
- Malignant ovarian carcinomas not typical for given age groups
- Indications for radiotherapy in 3rd clinical stage
- Treatment with isotopes administered intraperitoneally – advantages and disadvantages of the method
- Contemporary views on consolidated methods of treatment in some cases of ovarian carcinoma

B. Neoplasms of testicles vs. germinal neoplasms of non-gonad location
- Operational treatment of primary tumor
- Indications for chemotherapy and radiotherapy
- Indications of surgical removal of residual changes
- Cancer markers – meaning in diagnostics and monitoring of the treatment

5.

A. Neoplasms of kidney, bladder – indications for radiotherapy and system treatment
- The role of surgical procedures in kidney cancer
- Procedures in disseminated kidney cancer
- Evaluation of the stage of bladder cancer, indications for interbladder chemotherapy, the role of chemotherapy in the stage of generalization
- Sparing treatment of bladder cancer – clinical tests results

B. Neoplasm of prostate
- Controversy on screening tests on neoplasm of prostate
- Surgical and system treatment, complications after surgical treatment
- Radiotherapy of prostate cancer, indications for tele and brachytherapy, complications after radiotherapy, palliative radiotherapy
- System treatment (hormonotherapy, chemotherapy)
- Palliative treatment in disseminated cancer of prostate

C. Neoplasms of penis
- The role of surgery
- Indications for teletherapy and brachytherapy
- Procedures concerning lymph glands

IV. Block of classes devoted to treatment of neoplasms of alimentary system. Treatment of other neoplasms. Specific situations in oncology (12 hours)

1.
Neoplasms of large intestine
- Radical associated treatment vs. independent surgical treatment, sequence of individual methods of treatment
- Indications for: pre-operational and post-operational radiotherapy, neoadjuvant supplementing and palliative therapy in rectum cancer
- Operational techniques in surgery of large intestine (tendency to spare sphincter, TME, colostomy, ileostomy), operating the patients after radiotherapy and chemotherapy, the role of the surgeon in treatment of complications after associated treatment
2. Neoplasms of stomach and esophagus
   - Prophylaxis, diagnostics and the diseases favouring origin of stomach and esophagus cancer
   - Radical surgical treatment, palliative and symptomatical surgical treatment
   - Indications for system treatment in the cancer of stomach and esophagus
   - Indications for radiotherapy in radical and palliative treatment of esophagus cancer

B. Neoplasms of pancreas, liver and bile ducts – indications for supplementary post-operative treatment

3. Neoplasms of nervous system
   - The role of radiotherapy in radical treatment and supplementing the surgical treatment
   - Planning of RT in 3D system
   - Perspectives of radiotherapy - radiosurgery, stereotactic radiation
   - The role of chemotherapy
   - Metastasis to brain – the role of radiotherapy and surgery
   - Anti-swelling procedures during and after radiotherapy
   - Melanoma of the eyeball – indications and the technique if treatment by radiation energy

B. Associated treatment of lymphomas – the role of radiotherapy in associated treatment or applied as independent method of treatment, radioimmunotherapy

4. A. System treatment of solid tumors (chemotherapy, hormonotherapy, methods applied in directed treatment)
   - The rules of treatment
   - Neoadjuvant treatment, supplementing, diseases in the state of generalization
   - Factors influencing the efficiency of treatment, efficiency of chemotherapy
   - New medicines

B. Supporting treatment in oncology and the problem of quality of life
   - Complications of oncological treatment - their characteristics, prophylaxis and treatment
C. Procedure with the patient after finishing oncological treatment
   ○ Rehabilitation, prosthetics, provision for stoma patients, psychological support
   ○ Reconstructive surgery
   ○ Evaluation of treatment effects
   ○ Directives concerning control tests after the treatment

5. Specific situations in cancer treatment:
   ○ Neoplasms induced by antineoplasm treatment (radiotherapy, chemotherapy, hormonotherapy)
   ○ Neoplasm metastasis from the source of unknown location (the rules of diagnostics and treatment, indications for radiotherapy and for system therapy)
   ○ Treatment of neoplasms in pregnant women
   ○ Neoplasms connected with HIV infection
   ○ Treatment of senile patients
   ○ The states of sudden threat to life in oncology

The aim of the teaching subject and the effect of education- skills and competence:

Strategic aim of learning
Making students acquainted with prophylaxis, epidemiology, etiology, diagnostics and treatment of neoplasms.

The classes for the students of the 6th year have integrating character (systematizing) of the knowledge and skills gained so far at the pre-clinical and clinical classes in etiology, epidemiology, prophylaxis, identification and treatment on cancer diseases and the control and acting after oncological treatment.

The meaning of radiotherapy, the method of treatment that usually students had no contact with during the studies, is stressed during the classes. The focus is also on specific character of chemotherapy of solid tumors, surgery and oncological gynecology, the necessity of running associated treatment and the rules of cooperation among radiotherapists, clinical oncologists and oncological surgeons and the doctors of other specializations. The meaning of primary and secondary prophylaxis, “oncological sensitivity” of the doctors of all specializations and the strategic role of the first contact physicians in detecting the cancers at their early stages of clinical development are stressed.

The classes take place in the center specializing in treatment of malignant neoplasms which can run associated anti-neoplastic treatment. All the classes take place “at the oncological patient’s bed”. The students participate in determining the stage of development of the disease, in planning the strategy of treatment and have the opportunity to learn the skill of informing the patients about the character of their disease and the necessity of long term, often mutilant therapy. The students participate in diagnostic and therapeutic procedures, analyze the results of the tests and the effects of the therapy.
Important part in teaching oncology is played by the procedures taken in acting with the patients with the complications of oncological treatment which the doctors of various specializations can encounter in everyday practice.

**Learning outcomes**

Knowledge of early and late symptoms of cancer diseases. Ability to collect oncological interview and examination of the patient with suspected or identified malignant tumor. Ability to choose diagnostic methods and to stage the neoplasms. Knowledge of associated oncological treatment, performing simple diagnostic, nursing and rehabilitative operations after oncological treatment. Ability of acting with the patient during oncological treatment and after its finishing. Knowledge of the principles of acting in case of complications after the treatment, prosthetics and extra-medical support, acting in case of threat to life of oncological patients. The principles of nursing, identifying and avoiding the complications after colostomy, jejunostomy and nephrostomy. The knowledge of the system of the organization of fighting cancer in Poland and the rules of cooperation with specialist oncological centers and the registers of neoplasms. Ability to use the screening examinations system in Poland. The student should have the skill of contacting with the oncological patient and his family.

**Remarks about realization**

The lectures take place according to typical rules and are build on the cycle of five lectures, two teaching units each. The classes include presentation of clinical cases and patients and discussion about this subject. The teacher should encourage students to be active and should check the level of their being prepared to the classes. It is recommended to apply a spiral set of syllabus. Basic elements being all the time in mind of the teacher and the students are: the early symptoms and early detection of cancer, prophylaxis and the basics of diagnostics and associated treatment. The students get the signature after each thematic cycle. The course on oncology is finished by the exam.

**Suggested reading:**

- DeVita, Hellman and Ropson’s Cancer: Principles and Practice of Oncology Review by Ramaswamy Govindan M; Lippincott Williams & Wilkins Publishers
- Oxford Handbook of Oncology
- Washington Manual Of Oncology
- DeVita, Hellman and Rosenberg’s Cancer: Principles and Practice of Oncology Review by Ramaswamy Govindan M; Lippincott Williams & Wilkins Publishers
- *UICC Manual of Clinical Oncology*; by Raphael E. Pollock, James H. Doroshow, David Khayat, Akimasa Nakao, Brian O’Sullivan (Editors); John Wiley & Sons
- Bengel W., Vehman G. Diagnostyka różnicowa chorób błon śluzowych jamy ustnej. Wydawnictwo Kwintescencja, Warszawa 2000

Names of the lectors:
prof. zw. dr hab. n. med. Jan Kornafel
dr n. med. Barbara Izmałowicz
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Criteria of the promotion: test exam