
Contents

1 Principles of Medical Oncology

1.1	Epidemiology	1
1.2	Carcinogenesis, Molecular Tumor Biology	3
1.3	Hematopoiesis and Development of Hematological Neoplasia	7
1.4	Prevention and Screening	10
1.5	Classification of Diseases and ICD System	14
1.6	Tumor Classification and TNM System	17
1.7	Indications for Tumor Therapy	19
1.8	Performance Status of Tumor Patients (“Performance Status Scales”) ..	21
1.9	Response Evaluation in Solid Tumors	22
1.10	Common Toxicity Criteria (NCI)	25
1.11	Assessing the Quality of Life of Tumor Patients	30
1.12	Evidence-based Medicine (EBM), Guidelines and Quality Management	32
1.13	Electronic Media	35

2 Special Diagnostics

2.1	Cytogenetics and Fluorescence In Situ Hybridization (FISH)	39
2.2	Molecular Diagnosis	42
2.3	Gene Expression Analysis using Microarrays	45
2.4	Tumor Markers	47
2.5	CD Antigens and Immunocytological Diagnosis	51
2.6	HLA System and MHC	62

3 Pharmacology and Pharmacotherapy

3.1	Basic Principles of Chemotherapy	65
3.2	Cytostatic Drugs	69
3.2.1	Characteristics of Clinically Used Cytostatic Drugs	71
3.2.2	Check List Cytostatic Treatment	131
3.2.3	Drug Dosage Calculation Based on Body Surface Area (BSA)	132
3.2.4	Dose Adjustment of Cytostatic Drugs	134
3.2.5	Chemotherapy During Pregnancy and Lactation	141
3.2.6	Selected Cytostatic Drug Incompatibilities	143
3.2.7	Preparation and Stability of Cytostatics	146
3.3	Hormone Therapy	153
3.3.1	Characterization of Hormone Treatments in Oncology	156
3.4	Cytokines	170
3.5	Monoclonal Antibodies	178
3.6	Specific Protein Kinase Inhibitors (“Targeted Therapies”)	188
3.7	Drug Development and Clinical Studies	198
3.8	Pharmacogenetics and Pharmacogenomics	201

4 Supportive Treatment

4.1	Antiemetic Prophylaxis and Therapy	204
4.2	Antibiotic Treatment and Neutropenic Fever	211

4.3	Growth Factors	218
4.4	Nutrition in Cancer Patients	225
4.4.1	Malnutrition in Cancer Patients	225
4.4.2	Parenteral Nutrition	232
4.5	Pain Control	235
4.6	Fatigue	241
4.7	Bisphosphonates	243
4.8	Malignant Effusions	249
4.8.1	Malignant Pleural Effusion	250
4.8.2	Malignant Pericardial Effusion	254
4.8.3	Malignant Ascites	257
4.9	Transfusion Therapy	261
4.9.1	Cellular Blood Products	261
4.9.2	Non-cellular Blood Products	267
4.10	Human Sperm Cryopreservation	271
4.11	Cryopreservation of Human Pronuclear Oocytes	274
4.12	Sexual Dysfunction	276
4.13	Physiotherapy and Sports Medicine	278
4.14	Principles of Oncology Nursing Care	281
4.15	Psycho-oncological Care	286
4.16	Rehabilitation	289
5	Particular Treatment Procedures	
5.1	Hematopoietic Stem Cell Technology (Harvesting, Culture, Purging) ..	293
5.2	Autologous Hematopoietic Stem Cell Transplantation	296
5.3	Allogeneic Hematopoietic Stem Cell Transplantation	302
5.4	Granulocyte Transfusion	309
5.5	Immunotherapy	311
5.6	Gene Therapy	315
5.7	Inhibition of Angiogenesis	319
5.8	Developmental Therapeutics	322
6	Hematology and Hemostasis	
6.1	Aplastic Anemia	327
6.2	Neutropenia and Agranulocytosis	332
6.3	Thrombocytopenia	336
6.3.1	Immune (Idiopathic) Thrombocytopenic Purpura (ITP, Werlhof's Disease)	339
6.3.2	Heparin-induced Thrombocytopenia (HIT)	343
6.3.3	Thrombotic Microangiopathies (TTP-HUS)	345
6.4	Anemia	348
6.4.1	Hypochromic Anemia	351
6.4.2	Megaloblastic Anemia	355
6.4.3	Hemolytic Anemia	359
6.4.4	Normochromic Anemia	369
6.5	Coagulation Disorders	371
6.5.1	Acquired Coagulation Disorders	376
6.5.2	Factor VIII Deficiency (Hemophilia A)	381

6.5.3	Factor IX Deficiency (Hemophilia B)	384
6.5.4	Von Willebrand's Disease (VWD)	386
6.5.5	Disseminated Intravascular Coagulation (DIC)	389
6.6	Thromboembolism and Thrombophilia	393
7	Hematological Neoplasia	
7.1	Acute Leukemias	400
7.1.1	Acute Lymphoblastic Leukemia (ALL)	400
7.1.2	Acute Myeloid Leukemia (AML)	415
7.2	Myelodysplastic Syndrome (MDS)	423
7.3	Myeloproliferative Disorders (MPD)	429
7.3.1	Chronic Myeloid Leukemia (CML)	431
7.3.2	Polycythemia Vera	439
7.3.3	Essential Thrombocythemia	443
7.3.4	Chronic Idiopathic Myelofibrosis (CIMF)	447
7.4	Hodgkin's Disease (Hodgkin's Lymphoma)	450
7.5	Non-Hodgkin's Lymphomas (NHL)	458
7.5.1	High-grade Non-Hodgkin's Lymphoma	463
7.5.2	Chronic Lymphocytic Leukemia (CLL)	470
7.5.3	Prolymphocytic Leukemia (PLL)	477
7.5.4	Hairy Cell Leukemia (HCL)	480
7.5.5	Follicular Lymphoma (FL)	483
7.5.6	Mantle Cell Lymphoma (MCL)	488
7.5.7	Primary Cutaneous T-cell Lymphoma (CTCL)	492
7.5.8	Primary Lymphoma of the Central Nervous System (CNS)	498
7.5.9	Marginal Zone Lymphoma (MZL)	502
7.5.10	Multiple Myeloma	506
7.5.11	Immunocytoma (Waldenström's Macroglobulinemia)	515
7.6	Langerhans Cell Histiocytosis (LCH)	518
7.7	Mastocytosis	522
8	Medical Oncology	
8.1	Head and Neck Tumors	528
8.2	Tumors of the Respiratory System	535
8.2.1	Lung Cancer	535
8.2.2	Mesotheliomas	546
8.2.3	Mediastinal Tumors	550
8.3	Gastrointestinal Tumors	555
8.3.1	Esophageal Carcinoma	555
8.3.2	Gastric Cancer	560
8.3.3	Cancer of the Small Intestine	566
8.3.4	Colorectal Cancer	570
8.3.5	Anal Carcinoma	577
8.3.6	Pancreatic Carcinoma	581
8.3.7	Hepatocellular Carcinoma (HCC)	587
8.3.8	Tumors of the Gallbladder and Bile Duct	593
8.4	Tumors of the Female Reproductive System	597
8.4.1	Breast Cancer	597

8.4.2	Malignant Ovarian Tumors	611
8.4.3	Malignant Germ Cell Tumors in Women	619
8.4.4	Granulosa Cell Tumors of the Ovary	623
8.4.5	Sertoli-Leydig Cell Tumors	626
8.4.6	Malignant Trophoblastic Tumors	628
8.4.7	Cervical Cancer	633
8.4.8	Endometrial Carcinoma	640
8.4.9	Uterine Sarcoma	646
8.4.10	Vaginal Cancer	649
8.4.11	Vulvar Cancer	652
8.5	Tumors of the Male Reproductive System	656
8.5.1	Testicular Tumors	656
8.5.2	Extragenital Germ Cell Tumors	665
8.5.3	Prostate Cancer	669
8.5.4	Penile Cancer	678
8.6	Tumors of the Urinary Tract	682
8.6.1	Renal Cell Carcinoma	682
8.6.2	Tumors of the Renal Pelvis, Ureter, and Bladder	688
8.7	Tumors of the Endocrine System	696
8.7.1	Thyroid Cancer	696
8.7.2	Neuroendocrine Tumors (NET)	702
8.7.3	Malignant Pheochromocytoma and MEN	709
8.7.4	Tumors of the Adrenal Cortex	713
8.7.5	Pituitary Gland Tumors	716
8.8	Malignant Tumors of the Skin	719
8.8.1	Melanoma	719
8.8.2	Basal Cell Carcinoma	727
8.8.3	Squamous Cell Carcinoma	729
8.8.4	Merkel Cell Carcinoma	732
8.9	Sarcomas	735
8.9.1	Soft Tissue Sarcoma	735
8.9.2	Gastrointestinal Stromal Tumor (GIST)	740
8.9.3	Primitive Neuroectodermal Tumors (PNET) and Ewing's Sarcoma	742
8.9.4	Osteosarcoma	746
8.10	CNS Tumors	751
8.11	Cancer of Unknown Primary (CUP)	756
8.12	Metastasis	760
8.12.1	Brain Metastases	762
8.12.2	Carcinomatous Meningitis (Leptomeningeal Metastases)	764
8.12.3	Lung Metastases	768
8.12.4	Liver Metastases	770
8.12.5	Bone Metastases	772
8.13	Paraneoplastic Syndromes	774
9	Hematological and Oncological Emergencies	
9.1	Neutropenic Sepsis	781
9.2	Superior Vena Cava Syndrome (SVCS)	783
9.3	Spinal Cord Compression / Cauda Equina Syndrome	785

9.4	Malignant Cardiac Tamponade	787
9.5	Malignant Hypercalcemia	789
9.6	Tumor Lysis Syndrome	791
9.7	Hemorrhagic Complications / Malignant Vascular Erosion	793
9.8	Transfusion Reactions	795
9.9	Extravasation of Cytostatic Drugs	799
10	Standard Operating Procedures (SOP)	
10.1	Thoracentesis	802
10.2	Pleurodesis	804
10.3	Abdominal Paracentesis	806
10.4	Bone Marrow Aspiration and Biopsy	808
10.5	Basic Hematological Diagnostics	811
10.6	Lumbar Puncture (Spinal Tap) and Intrathecal Instillation of Cytostatic Drugs	816
10.7	Central Venous Access (CVA), Central Venous Catheter (CVC)	818
10.8	Blood Cultures	821
11	Standardized Treatment Protocols	823
	Subject Index	991