

## Contents

1	Introduction.....	13
1.1	Basic definitions.....	13
1.2	Methods and ways of investigation in pathology.....	13
1.2.1	Biopsy examination.....	13
1.2.2	Cytological examination.....	14
1.2.3	Immunohistological and molecular biology methods.....	15
2	Regressive changes.....	17
2.1	Death.....	17
2.1.1	Signs of death.....	17
2.2	Necrosis.....	18
2.2.1	Types of necrosis.....	19
2.2.1.1	Simple necrosis.....	19
2.2.1.2	Coagulation necrosis.....	19
2.2.1.3	Liquefactive necrosis.....	19
2.2.1.4	Caseous necrosis.....	19
2.2.1.5	Zenker's necrosis.....	20
2.2.1.6	Haemorrhagic necrosis.....	20
2.2.1.7	Fibrinoid necrosis.....	20
2.2.2	Causes of necrosis.....	20
2.2.2.1	Further progression of necrosis.....	22
2.2.3	Gangrene.....	23
2.2.3.1	Dry gangrene (mummification).....	23
2.2.3.2	Wet gangrene (sphacelus, gangraena humida).....	23
2.2.3.3	Gas gangrene (emphysematous gangrene).....	23
2.3	Atrophy.....	23
2.3.1	Classification of atrophies.....	23
2.3.1.1	Simple atrophy.....	23
2.3.1.2	Numerical atrophy.....	24
2.3.2	Causes of atrophies.....	24
2.4	Impaired cell metabolism (formely dystrophy).....	25
2.4.1	Intracellular accumulation of fats.....	25
2.4.1.1	Steatosis.....	25
2.4.1.2	Lipidoses (thesaurismoses).....	27
2.4.1.3	Hyperlipoproteinaemia.....	27
2.4.2	Protein accumulation.....	28
2.4.2.1	Inclusions.....	28
2.4.2.2	Amyloidosis.....	29
2.4.2.3	Gout.....	30
2.4.3	Accumulation of sugars (glycogen).....	30
2.4.3.1	Glycogenoses.....	30
2.4.4	Water and electrolyte metabolism disorders.....	31
2.4.4.1	Some causes and types of oedema.....	31
3	Mineral metabolism disorders.....	33
3.1	Crystals and concretions.....	33
4	Pigmentation.....	35
4.1	Endogenous pigments.....	35
4.1.1	Autogenous pigments.....	35
4.1.2	Haematogenous pigments.....	36
4.2	Exogenous pigments.....	38
4.2.1	Silicosis.....	39
4.2.2	Coniotoxicoses and allergoses from the dusty lungs.....	40

5	Physical, chemical and nutritional causes of diseases .....	41
5.1	Physical causes of diseases .....	41
5.1.1	Traumas, multiple traumas .....	41
5.1.2	Heat effects on the organism .....	41
5.1.3	Atmospheric effects .....	42
5.1.4	Electrical injuries .....	43
5.1.5	Radiation .....	43
5.2	Chemical causes of diseases .....	43
5.2.1	Acids, bases and heavy metals .....	44
5.2.2	Medications .....	44
5.2.3	Alcohol .....	45
5.2.4	Smoking .....	45
5.3	Nutritional disorders .....	45
5.3.1	Overnutrition - obesity .....	45
5.3.2	Malnutrition – starvation (esuries) .....	46
5.3.3	Vitamins and hypovitaminosis .....	46
6	Genetically determined diseases .....	48
6.1	Diseases caused by gene activation or inactivation defects .....	48
6.1.1	Clinically important malformations .....	49
6.2	Chromosomal abnormalities .....	49
6.2.1	Numerical aberrations .....	49
6.2.2	Syndroms originating from autosomal chromosome aneuploidy .....	50
6.2.3	Syndromes caused by sex chromosome aneuploidy .....	51
6.3	Diseases caused by gene mutations .....	51
6.3.1	Autosomal dominant diseases .....	52
6.3.2	Autosomal recessive diseases .....	53
6.3.3	Diseases related to enzymatic defects .....	53
6.3.4	Diseases related to X chromosome .....	53
6.4	Multifactorially (polygenically) determined diseases .....	54
7	Blood and lymph circulation disorders .....	55
7.1	Local disorders of blood circulation .....	56
7.1.1	Thrombosis .....	56
7.1.2	Embolism .....	58
7.1.3	Metastasis .....	58
7.1.4	Manifestations of local disorders of blood circulation .....	59
7.1.5	Local anaemia - ischaemia .....	59
7.1.5.1	Classification of infarction according to their appearance .....	60
7.1.6	Haemorrhage .....	60
7.1.7	Haemorrhagic diathesis. Haemorrhagic disorders .....	61
7.1.7.1	Decreased platelet count (thrombocytopenia) .....	61
7.1.7.2	Platelet quality disorders (thrombocytopathy) .....	62
7.1.7.3	Coagulopathy – plasma factor disorders .....	62
7.1.7.4	Vascular wall disorders .....	63
7.2	Lymph circulation disorders .....	64
8	Shock .....	65
8.1	Causes of shock .....	65
8.2	Structural organ changes in shock .....	65
9	Inflammation .....	67
9.1	Macroscopic signs of inflammation .....	67
9.2	Microscopic signs of inflammation .....	68
9.2.1	Exudation and infiltration .....	68
9.2.2	Cells of inflammatory exudate .....	69



9.3	Classification of inflammations .....	70
9.3.1	Types of inflammations .....	71
9.3.1.1	Alterative inflammations .....	71
9.3.1.2	Exudative inflammations .....	71
9.3.1.2.1	Serous inflammation .....	71
9.3.1.2.2	Non-purulent inflammation .....	72
9.3.1.2.3	Purulent inflammation .....	72
9.3.1.2.4	Fibrinous inflammation .....	72
9.3.1.2.5	Gangrenous inflammation .....	74
9.3.1.2.6	Chronic inflammation .....	74
9.3.1.3	Proliferative (fibroproductive) inflammation .....	75
9.3.2	Diseases with the presence of immune granulomas .....	76
9.3.2.1	Tuberculosis .....	76
9.3.2.2	Sarcoidosis .....	78
9.3.2.3	Leprosy .....	79
9.3.2.4	Syphilis .....	79
9.3.2.5	Infectious scleroma (rhinoscleroma) .....	80
9.3.2.6	Lymphogranuloma venereum .....	80
10	Progressive changes .....	82
10.1	Regeneration .....	82
10.2	Reparation .....	83
10.3	Hypertrophy and hyperplasia .....	84
10.4	Metaplasia .....	85
10.5	Dysplasia and precancerosis .....	86
11	Disorders of immune reactions .....	87
11.1	Pathological immune statuses .....	87
11.1.1	Insufficient production of antibodies .....	87
11.1.2	Impaired cellular immunity .....	87
11.1.3	Allergy .....	88
11.1.3.1	Anaphylactic type .....	88
11.1.3.2	Cytotoxic type .....	89
11.1.3.3	Complex type .....	89
11.1.3.4	Tuberculin-type delayed hypersensitivity .....	90
11.1.4	Cytokines – substances controlling immune reactions .....	90
11.1.5	Autoimmunity and autoimmune diseases .....	91
11.1.5.1	Development of autoimmune diseases .....	91
11.1.5.2	Organ-specific autoimmune diseases .....	92
11.1.5.3	Systemic autoimmune diseases .....	92
11.1.5.3.1	Systemic scleroderma .....	93
11.1.5.3.2	Dermatomyositis and polymyositis .....	93
11.1.5.3.3	Sjögren's syndrome .....	93
11.1.5.3.4	Primary progressive polyarthritis .....	94
11.2	Transplantation .....	94
12	Oncology .....	96
12.1	Pseudotumours .....	96
12.1.1	Disorders of embryonic development .....	96
12.1.2	Cysts .....	96
12.1.3	Deposition of pathological material .....	97
12.1.4	Inflammatory pseudotumours .....	97
12.1.5	Polyps .....	97
12.2	Molecular-biological basis of malignant tumours .....	97
12.3	Oncogenes .....	98

12.3.1	Activation of oncogenes.....	99
12.4	General characteristics of tumours.....	99
12.4.1	Morphology of tumours.....	100
12.4.1.1	Development and growth of tumour cells.....	100
12.4.1.2	Grading.....	101
12.4.2	Properties of tumours on the cellular level.....	101
12.4.3	Cytoskeletal cell structures and their role in tumour diagnostics.....	102
12.4.4	Tumour markers.....	102
12.4.4.1	Tumour antigens.....	103
12.4.4.2	Hormones produced by tumour cells.....	103
12.4.4.3	Hormone receptors.....	103
12.4.4.4	Enzymes (tumour isoenzymes) produced by tumours.....	103
12.4.4.5	Other proteins.....	103
12.4.4.6	Paraneoplastic syndrome.....	103
12.4.5	Classification of tumour according to their biological behaviour.....	104
12.4.5.1	Benign tumours.....	104
12.4.5.2	Malignant tumours.....	104
12.4.5.3	Intermediate tumours.....	105
12.5	Non-tumorous and tumorous mesenchymal lesions.....	106
12.5.1	Tumour-like lesions.....	106
12.5.1.1	Fibromatosis.....	106
12.5.1.2	Infantile digital fibromatosis.....	106
12.5.1.3	Nodular fasciitis.....	106
12.5.1.4	Xanthelasma/xanthoma.....	107
12.5.2	Benign and malignant tumours of connective tissue.....	107
12.5.2.1	Fibroma.....	107
12.5.2.2	Nuchal fibroma.....	107
12.5.2.3	Fibrosarcoma.....	107
12.5.3	Fibrohistiocytary tumours.....	107
12.5.3.1	Fibrous histiocytoma (dermatofibroma).....	108
12.5.3.2	Juvenile xanthogranuloma (naevoxanthoendothelioma).....	108
12.5.3.3	Dermatofibrosarcoma protuberans.....	108
12.5.3.4	Bednar tumour.....	108
12.5.3.5	Malignant fibrous histiocytoma.....	108
12.5.3.6	Myxoma.....	109
12.5.3.7	Pseudomyxoma peritonei.....	109
12.5.4	Tumours of adipose tissue.....	109
12.5.4.1	Lipoma.....	109
12.5.4.2	Lipoblastoma.....	110
12.5.4.3	Hibernoma.....	110
12.5.4.4	Liposarcoma.....	110
12.5.5	Vascular tumours.....	111
12.5.5.1	Haemangioma.....	111
12.5.5.2	Glomus tumour.....	112
12.5.5.3	Haemangiopericytoma.....	112
12.5.5.4	Haemangioendothelioma.....	112
12.5.5.5	Angiosarcoma.....	112
12.5.5.6	Kaposi's sarcoma.....	113
12.5.5.6.1	Classic (endemic) Kaposi's sarcoma.....	113
12.5.5.6.2	Kaposi's sarcoma in AIDS patients.....	113
12.5.5.6.3	Kaposi's sarcoma in immunosuppressed patients.....	113
12.5.5.6.4	African Kaposi's sarcoma.....	113



12.5.5.7 Lymphangioma.....	113
12.5.6 Smooth and striated muscle tumours .....	113
12.5.6.1 Leiomyoma .....	114
12.5.6.1.1 Angiectatic leiomyoma .....	114
12.5.6.1.2 Bizarre leiomyoma.....	114
12.5.6.1.3 Epithelioid leiomyoma (benign leiomyoblastoma).....	114
12.5.6.2 Leiomyosarcoma.....	114
12.5.6.3 Rhabdomyoma .....	114
12.5.6.4 Rhabdomyosarcoma.....	115
12.5.7 Gastrointestinal stromal tumours .....	116
12.5.8 Bone and cartilage tumours.....	117
12.5.8.1 Chondroma.....	117
12.5.8.2 Osteochondroma .....	118
12.5.8.3 Chondroblastoma (Codman's tumour).....	118
12.5.8.4 Chondrosarcoma .....	118
12.5.8.5 Osteoma .....	118
12.5.8.5.1 Osteoid osteoma.....	119
12.5.8.6 Osteoblastoma.....	119
12.5.8.7 Osteosarcoma.....	119
12.5.8.8 Synovial sarcoma (malignant synovioma).....	120
12.6 Haemoblastoses and haemoblastomas .....	120
12.6.1 Leukaemias .....	120
12.6.1.1 Acute leukaemias .....	120
12.6.1.1.1 Precursor B-lymphoblastic leukaemia / B-lymphoblastic lymphoma (B LBL)	
.....	121
12.6.1.1.2 Precursor T lymphoblastic leukaemia (T ALL) / T lymphoblastic lymphoma	
(T LBL).....	121
12.6.1.1.3 Acute myeloid leukaemia (AML) .....	121
12.6.1.2 Chronic myelogenous leukaemia (CML).....	122
12.6.2 Myelodysplastic syndrome .....	123
12.6.3 Chronic myeloproliferative diseases.....	124
12.6.4 Tumours of lymph nodes and extranodal lymphatic tissue (lymphomas) .....	127
12.6.4.1 Non-Hodgkin's lymphomas (NL).....	127
12.6.4.2 WHO classification of lymphomas .....	129
12.6.4.3 B-cell chronic lymphocytic leukaemia (CLL) / small lymphocytic lymphoma .....	130
12.6.4.4 Hairy cell leukaemia .....	131
12.6.4.5 Mantle cell lymphoma .....	131
12.6.4.6 Follicular lymphoma.....	132
12.6.4.7 Diffuse large B-cell lymphoma.....	132
12.6.4.8 Monoclonal gammopathy .....	133
12.6.4.8.1 Plasma cell myeloma .....	133
12.6.4.8.2 Solitary plasmacytoma .....	133
12.6.4.8.3 Lymphoplasmocytic lymphoma / Waldenström's macroglobulinaemia .....	134
12.6.4.9 Burkitt's lymphoma.....	134
12.6.4.10 Mycosis fungoides (cutaneous NL), .....	134
12.6.4.11 Anaplastic large cell lymphoma (ALCL).....	134
12.6.4.12 MALT lymphoma.....	135
12.6.5 Hodgkin's lymphoma.....	135
12.6.5.1 Nodular lymphocyte-predominant (NLPHL).....	137
12.6.5.2 Nodular sclerosis (NSHL).....	137
12.6.5.3 Mixed cellularity (MCHL).....	138
12.6.5.4 Lymphocyte-depleted (LDHL) .....	138



12.6.5.5 Lymphocyte-rich .....	138
12.6.6 Langerhans cell histiocytosis (formerly histiocytosis X).....	138
12.7 Epithelial tumours .....	138
12.7.1 Benign epithelial tumours .....	139
12.7.1.1 Papilloma .....	139
12.7.1.2 Papillary cystadenoma .....	139
12.7.1.3 Condyloma acuminatum .....	139
12.7.1.4 Adenomas.....	139
12.7.2 Neuroendocrine tumours of the gastrointestinal tract.....	140
12.7.2.1 Well-differentiated neuroendocrine tumours of the appendix (carcinoid).....	141
12.7.2.2 Well-differentiated endocrine carcinoma (malignant carcinoid) .....	142
12.7.3 Malignant epithelial tumours (carcinomas) .....	142
12.7.3.1 Squamous cell carcinoma (canceroid) .....	143
12.7.3.2 Basal cell carcinoma (basalioma) .....	143
12.7.3.3 Mixed basal-squamous cell carcinoma of the skin (metatypical carcinoma) .....	143
12.7.3.4 Nasopharyngeal carcinoma .....	143
12.7.3.5 Small cell carcinoma (poorly differentiated neuroendocrine carcinoma).....	144
12.7.3.6 Neuroendocrine carcinoma of the skin (tumour from Merkel's cells).....	144
12.7.4 Carcinoma in situ .....	144
12.7.5 Adenocarcinoma (malignant glandular tumour) .....	145
12.7.5.1 Mucinous carcinoma (gelatinous carcinoma) .....	145
12.7.5.2 Pseudomyxoma peritonei.....	145
12.7.5.3 Diffuse carcinoma (scirrhous, diffuse scirrhous).....	145
12.7.5.4 Trabecular carcinoma .....	146
12.7.5.5 Adenoid cystic carcinoma (formerly cylindroma) .....	146
12.7.5.6 Clear cell carcinoma.....	146
12.7.6 Double carcinomas.....	146
12.7.6.1 Mucoepidermoid carcinoma .....	146
12.7.6.2 Adenosquamous carcinoma.....	147
12.7.6.3 Adenoacanthoma .....	147
12.8 Neurodermal tumours, mixed tumours, germ cell tumours, gestational trophoblastic disease – trophoblastic tumours.....	147
12.8.1 Tumours of autonomic ganglia .....	147
12.8.1.1 Paraganglioma.....	147
12.8.1.2 Pheochromocytoma (adrenal paraganglioma) .....	148
12.8.1.3 Alveolar soft part sarcoma .....	148
12.8.1.4 Ganglioneuroma.....	148
12.8.1.5 Ganglioneuroblastoma .....	148
12.8.1.6 Neuroblastoma of the sympathetic nervous system (= sympathicoblastoma).....	148
12.8.2 Non-tumorous and tumorous lesions of peripheral nerves .....	149
12.8.2.1 Traumatic neuroma (amputation neuroma).....	149
12.8.2.2 Neurilemmoma (neurinoma, benign schwannoma) .....	149
12.8.2.3 Neurofibroma (solitary neurofibroma).....	149
12.8.2.4 Neurofibromatosis.....	150
12.8.2.5 Malignant tumours of peripheral nerves (formerly malignant schwannoma).....	150
12.8.3 Benign lesions and malignant tumours from naevus cells.....	150
12.8.3.1 Naevi .....	150
12.8.3.2 Malignant melanoma (melanoma) .....	151
12.8.4 Mixed tumours .....	152
12.8.5 Germ cell tumours.....	153
12.8.5.1 Teratoma.....	153
12.8.5.1.1 Immature (malignant) teratoma .....	153

12.8.5.1.2	Teratocarcinoma	153
12.8.5.2	Seminoma (the same tumour is called dysgerminoma if found in the ovaries)	153
12.8.5.2.1	Spermatocytic seminoma	154
12.8.5.3	Embryonal carcinoma	154
12.8.6	Gestational trophoblastic disease – trophoblastic tumours	154
13	Infections	156
13.1	Non specific defence mechanisms	156
13.2	Specific immune response	156
13.2.1	Humoral immune response	156
13.2.2	Cellular immune response	156
13.3	Bacterial infections	157
13.3.1	Septicaemia (sepsis)	157
13.3.2	Pyaemia	157
13.3.3	Staphylococcal infections	158
13.3.4	Streptococcal infections	158
13.3.5	Neisseria infections	160
13.3.5.1	Meningococcal cerebrospinal meningitis	160
13.3.5.2	Gonorrhoea	160
13.3.6	Enterobacterial infections	160
13.3.6.1	<i>Escherichia coli</i>	160
13.3.6.2	Salmonella infections	160
13.3.6.2.1	Typhoid (fever)	161
13.3.6.2.2	Paratyphoid	161
13.3.6.2.3	Gastroenteritis caused by salmonellae (salmonellosis)	161
13.3.6.3	Dysentery	161
13.3.6.4	Klebsiella infections	162
13.3.6.5	Campylobacter gastroenteritis	162
13.3.6.5.1	<i>Campylobacter jejuni</i>	162
13.3.6.5.2	<i>Helicobacter pylori</i>	162
13.3.6.6	Cholera	162
13.4	Infectious diseases discussed in the following chapters	163
13.4.1	Haemophilus infections	164
13.4.2	Yersinosis, tularaemia, bartonellosis	164
13.4.2.1	Plague	164
13.4.2.2	Mesenteric lymphadenitis	164
13.4.2.3	Tularaemia (rabbit fever)	164
13.4.2.4	Cat-scratch disease	165
13.4.3	Brucellosis	165
13.4.4	Anthrax	165
13.4.5	Glanders (Malleus)	165
13.4.6	Legionnaires' disease	166
13.4.7	Infections with sporulating anaerobic microbes	166
13.4.7.1	Tetanus	166
13.4.7.2	Gas gangrene	166
13.4.7.3	Meat poisoning	166
13.4.7.4	Botulism	166
13.4.7.5	Pseudomembranous enterocolitis (enterocolitis following antibiotic therapy)	166
13.4.8	Spirochetoses	167
13.4.8.1	Syphilis	167
13.4.8.2	Bejel	167
13.4.8.3	Framboesia (yaws)	167
13.4.8.4	Pinta	167



13.4.9	Leptospirosis .....	167
13.4.9.1	Weil's disease (an example of severe or even lethal leptospirosis).....	168
13.4.9.2	Swineherd's disease .....	168
13.4.9.3	Canicola fever (canine typhus, Stuttgart disease).....	168
13.4.9.4	Mud fever.....	168
13.4.10	Borrelioses .....	168
13.4.10.1	Relapsing fever .....	168
13.4.10.2	Lyme disease.....	168
13.4.11	Mycobacterial infections.....	168
13.4.12	Actinomycosis.....	169
13.4.13	Nocardiosis.....	169
13.4.14	Mycoplasma infections .....	169
13.4.14.1	<i>Mycoplasma pneumoniae</i> .....	169
13.4.14.2	<i>Mycoplasma hominis</i> .....	169
13.4.14.3	<i>Ureaplasma urealyticum</i> .....	170
13.4.15	Rickettsioses .....	170
13.4.15.1	Epidemic typhus.....	170
13.4.15.2	Spotted fever.....	170
13.4.15.3	Scrub typhus (Japanese river fever, tsutsugamushi disease).....	170
13.4.15.4	Q fever.....	170
13.4.16	Chlamydial infections .....	170
13.4.16.1	Ornithosis.....	171
13.4.16.2	Lymphogranuloma venereum and trachoma.....	171
13.5	Mycoses .....	171
13.5.1	Pathological conditions caused by fungi.....	171
13.5.1.1	Mycoses .....	172
13.5.1.2	Mycotoxicoses .....	172
13.5.1.3	Fungal allergy .....	172
13.5.2	Superficial mycoses .....	172
13.5.2.1	Tinea capitis .....	172
13.5.2.2	Tinea barbae (beard and moustache mycosis).....	172
13.5.2.3	Tinea corporis.....	172
13.5.2.4	Pityriasis versicolor.....	172
13.5.3	Deep mycoses .....	173
13.5.3.1	Chromoblastomycosis (chromomycosis).....	173
13.5.3.2	North American blastomycosis .....	173
13.5.3.3	Histoplasmosis .....	173
13.5.3.4	Adiaspiromycosis.....	173
13.5.3.5	Cryptococcosis (torulosis, European blastomycosis).....	173
13.5.3.6	Aspergillosis.....	173
13.5.3.7	Mucormycosis (zygomycosis) .....	174
13.5.3.8	Candidosis.....	174
13.5.3.9	Pneumocystosis.....	174
13.6	Viral and prion diseases .....	175
13.6.1	Routes of infection.....	175
13.6.2	Acute viral infections .....	176
13.6.2.1	Smallpox ( variola).....	176
13.6.2.2	Vaccinia .....	176
13.6.2.3	Chickenpox (varicella).....	176
13.6.2.4	Shingles (herpes zoster) .....	177
13.6.2.5	Herpes simplex virus infection (HSV).....	177
13.6.2.6	Infectious mononucleosis.....	177



13.6.2.7 Cytomegalovirus infection.....	178
13.6.2.8 Paramyxovirus infection.....	178
13.6.2.8.1 Measles (morbilli).....	178
13.6.2.8.2 Infection with respiratory syncytial virus.....	178
13.6.2.8.3 Mumps (infectious parotitis).....	178
13.6.2.9 Rubella.....	179
13.6.2.10 Tick-borne encephalitis.....	179
13.6.3 Chronic infections.....	179
13.6.3.1 Papillomavirus infections (HPV).....	179
13.6.3.2 Retroviral infections.....	179
13.6.3.2.1 Acquired immunodeficiency syndrome (AIDS).....	179
13.6.4 Hepatitis caused by viruses.....	180
13.7 Prion diseases.....	182
13.8 Protozoal infections.....	183
13.8.1 Trichomoniasis.....	183
13.8.2 Toxoplasmosis.....	183
13.8.3 Leishmaniasis.....	183
13.8.4 Amoebic dysentery (amoebiasis).....	184
13.8.5 Malaria.....	185
13.8.6 Giardiasis.....	185
13.9 Worm infections (helminthiasis).....	186
13.9.1 Diseases cause by Nematoda.....	186
13.9.1.1 Enterobiasis.....	186
13.9.1.2 Ascariasis.....	186
13.9.1.3 Trichinosis.....	186
13.9.1.4 Ancylostomiasis.....	186
13.9.1.5 Visceral larva migrans (Toxocariasis).....	187
13.9.1.6 Filariasis.....	187
13.9.2 Diseases cause by Cestoda.....	187
13.9.2.1 Beef taeniasis.....	187
13.9.2.2 Pork taeniasis.....	187
13.9.2.3 Diphyllbothriasis.....	187
13.9.2.4 Echinococcosis.....	188
13.9.2.4.1 Infection with the hydatid worm <i>Echinococcus granulosus</i> .....	188
13.9.2.4.2 Infection with the hydatid form of <i>Echinococcus multilocularis</i> .....	188
13.9.3 Diseases cause by Trematoda.....	188
13.9.3.1 Clonorchiasis.....	188
13.9.3.2 Fascioliosis.....	188
13.9.3.3 Schistosomiasis.....	189

## 1.2 METHODS AND WAYS OF INVESTIGATION IN PATHOLOGY

### 1.2.1 Biopsy examination

The importance of biopsy examinations continues to rise. The number of facilities sampling tissues for biopsy examinations keeps increasing. Modern devices and examination methods may relatively exactly localise the pathological process after a tissue is sampled either surgically or using special instruments.