

Contents

1	Echoanatomy: Tissue Echopatterns	1
1.1	The Kidney Itself	1
	Shape	1
	Size	1
	Pyelovascular Central Area, Renal Pelvis	1
	Renal Parenchyma	6
1.2	The Kidney as a Part of the Retroperitoneal Compartment	11
	Juxtarenal Compartments	11
	Bone and Muscle	11
	Vessels	11
	Adrenal Gland	18
	Retrocaval Kidney	18
	Pancreas	18
1.3	Less Direct Renal Relationships	18
	Right Side	18
	Left Side	21
1.4	Basic Tissue Echopatterns: Pitfalls and Artifacts	21
	Tissue Echopatterns	21
	Artifacts	22
2	Examination Techniques	27
2.1	Technical Data	27
	Contact Scanning	27
	Real Time	27
	Peroperative Sonography	30
2.2	Technological Prospects	30
2.3	Technical Factors of Image Quality	30
	Suppression of Kinetic Blurring	30
	Axial and Lateral Spatial Resolution	30
	Total Gain and Time Gain Compensation Settings	32
2.4	Positioning and Scanning Directions	32
	Real Time	32
	Contact Scanning	37
2.5	Particular Problems	37
	Critically Ill Patients; Recently Operated Patients; Traumatized Patients	37
	Newborn and Infant	37
	Puncture Techniques	37
2.6	General Management of Ultrasonic Examinations	38

3	Hydronephrosis	39
3.1	Beginning Hydronephrosis	39
3.2	Frank Hydronephrosis	41
3.3	Major Hydronephrosis	47
3.4	Differential Diagnosis	50
3.5	Ureteral Dilatation	51
3.6	Complementary Pelvic Examination	52
3.7	Renal Lithiasis	54
4	Renal Cysts	59
	The Renal Cystic Pattern	59
4.1	Benign Cysts	60
	Diagnostic Circumstances	60
	Ultrasonic Pattern	60
	Multiple Benign Cysts	60
	Atypical Cysts – Tumoral Cysts	60
	Parapelvic Cysts	65
	Differential Diagnosis	67
	Clinical and Radiological Management	70
4.2	Polycystic Processes	71
	Polycystic Processes of the Neonate and Child	71
	Infantile and Juvenile Polycystic Disease	71
	Polycystic Disease of the Adult (PCD)	72
	Echinococcal Cysts	74
	Differential Diagnosis of Multiple Cysts	75
5	Renal Tumors	83
5.1	Malignant Tumors	83
	Renal Cell Carcinoma	83
	Oncocytomas	93
	Urothelial Carcinomas	93
	Wilms' Tumors and Mesoblastic Nephromas	93
	Renal Sarcomas	94
	Renal Metastases	94
	Renal Lymphomas	94
	Diagnosis	95
5.2	Benign Tumors	96
5.3	Differential Diagnosis	100
	Large Tumors (Over 10 cm in Diameter)	100
	Medium-Sized Tumors (4–10 cm in Diameter)	100
	Small Tumors (Under 4 cm in Diameter)	100
	Reliability	101
6	Evaluation of Tumoral Spread: The Retroperitoneal Space	103
6.1	Direct Spread	103
6.2	Lymphatic Spread	103

6.3	Intracaval Extension	108
6.4	Metastatic Spread	113
6.5	Clinical and Radiological Policy	114
6.6	Particular Cases	114
	Urothelial Tumors	114
	Tumors in Children	115
	Local Recurrences After Nephrectomy	115
	Other Retroperitoneal Abnormalities	115
7	Infections and Inflammatory Processes	117
7.1	Abscesses	117
	Bacterial	117
	Tuberculous	118
	Differential Diagnosis – Xanthogranulomatous Pyelonephritis	118
7.2	Bacterial Nephritides	119
7.3	Pyonephrosis	120
	Recently Infected Hydronephrosis	120
	Older Pyonephrosis	120
7.4	Tuberculosis	120
7.5	Differential Diagnosis of Chronic Inflammatory Processes	123
7.6	Chronic Pyelonephritis	123
7.7	Nephrocalcinosis, Papillary Necrosis, and Cortical Necrosis	125
	Nephrocalcinosis	125
	Papillary Necrosis	125
	Cortical Necrosis	125
7.8	Nephritides	125
	Renal Size	125
	Echotexture	125
7.9	Postnephrectomy Abscesses	127
	Ultrasound and IVU in Chronic Inflammatory Processes	127
8	Hunchbacks, Dwarfs, and Giants	129
8.1	Horseshoe Kidneys	129
8.2	Miscellaneous Anomalies	130
8.3	Absence of Kidney; Ectopic Kidneys	130
8.4	Renal Hypoplasia	131
8.5	Nephromegaly	132
	Nephromegaly with Normal Differentiation	132
	Nephromegaly with Loss of Parenchymal-Central Differentiation	132
	Heterogeneous Nephromegaly	133
	Multinodular Nephromegaly	133
8.6	Abnormalities of Vascular Origin	134
	Renal Vein Thrombosis	134
	Renal Artery Occlusion	134

8.7	The Transplanted Kidney	135
	Rejection	135
	Arterial Thrombosis	136
	Renal Vein Thrombosis	136
	Hydronephrosis	136
	Liquid Collections	137
	Cancerization	140
8.8	Ultrasound in Renal Failure – Anuria	140
9	Ultrasonic Differential Diagnosis and Diagnostic Policies: Synopsis	143
10	Renal Trauma and Juxtarenal Collections, Traumatic and Nontraumatic	147
10.1	Examination Procedure in the Traumatized Patients	147
10.2	Renal Lesions	147
	Contusion	147
	Renal Wounds and Fractures – Intrarenal Hematomas	147
10.3	Juxtarenal Abnormalities	149
	Hematomas	149
10.4	Traumatic Urinomas (Uriniferous Cysts) and Nontraumatic Collections	151
	Trauma and Preexisting Lesions	152
10.5	Associated Lesions	153
10.6	Radiological Policy	155
11	Adrenals	157
11.1	The Normal Adrenal	157
	Examination Procedure	157
11.2	The Pathological Adrenal	158
	Tumors	158
	Pheochromocytomas	161
	Other Tumors	162
	Metastases	164
	Bilateral Tumors	164
	Tumoral Spread	164
	Hematomas	164
11.3	Diagnosis	166
11.4	Reliability and Diagnostic Policy	166
12	Lower Urinary Tract	169
12.1	Bladder	169
	True and False Diverticula-Stones	171
	Ureterocele	171
	Intramural Ureter	171
	Tumors	173
	Urachus	176
	Urethra	176

12.2 Prostate	179
Scanning Technique	179
Normal Prostate	179
Tumors	182
Prostatitis	182
Seminal Vesicles	182
Diagnostic Policy in Prostatic Swellings	182
12.3 Testis and Its Covering	191
Examination Procedure	191
Normal Testis	191
Miscellaneous Abnormalities	192
Varicoceles	193
Trauma	194
Orchitis and Epididymitis	195
Tumors	195
 References	 197
 Subject Index	 209